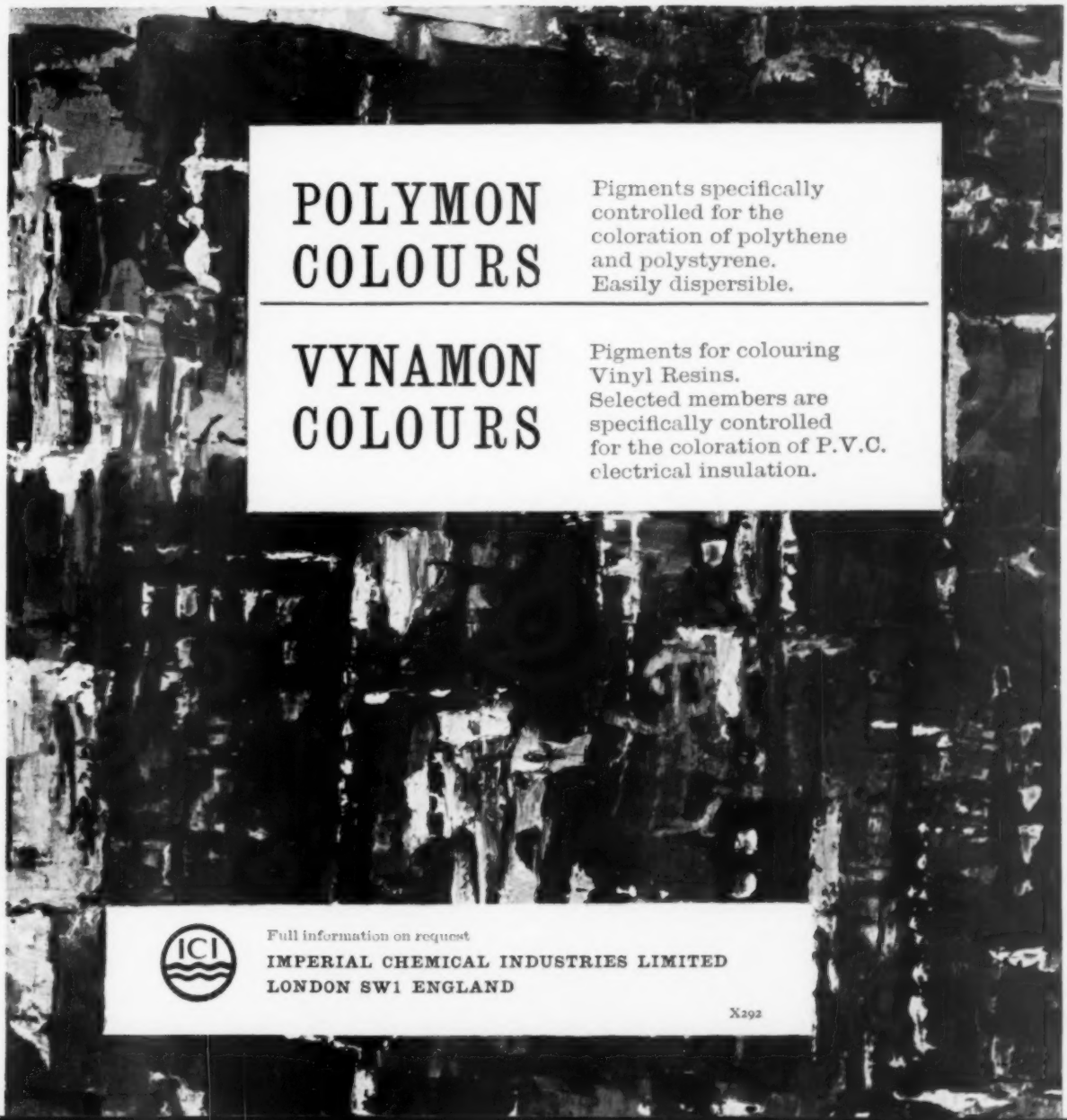
RUBBER and PLASTICS WEEKLY

VOLUME 161 No. 8 DECEMBER 4 1971 ONE SHILLING

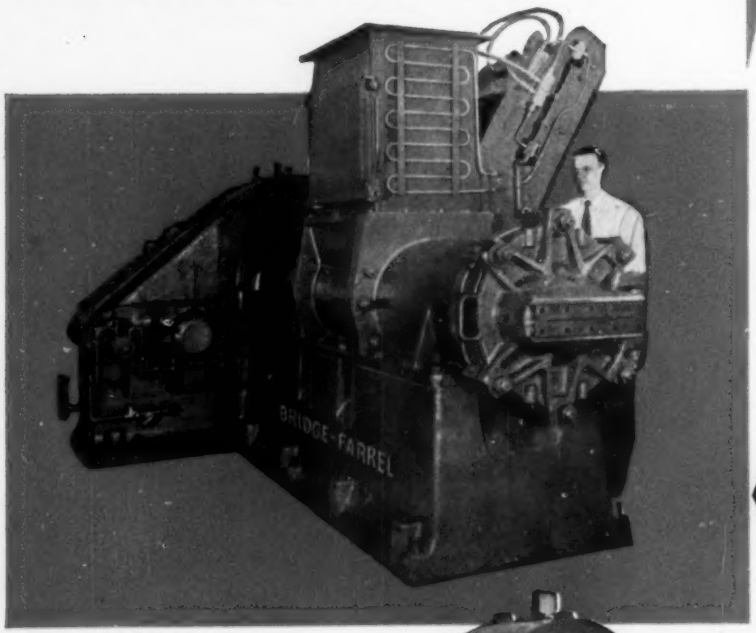

POLYMON COLOURS
Pigments specifically controlled for the coloration of polythene and polystyrene. Easily dispersible.
VYNAMON COLOURS
Pigments for colouring Vinyl Resins. Selected members are specifically controlled for the coloration of P.V.C. electrical insulation.
ICI
Full information on request
IMPERIAL CHEMICAL INDUSTRIES LIMITED
LONDON SW1 ENGLAND
X292

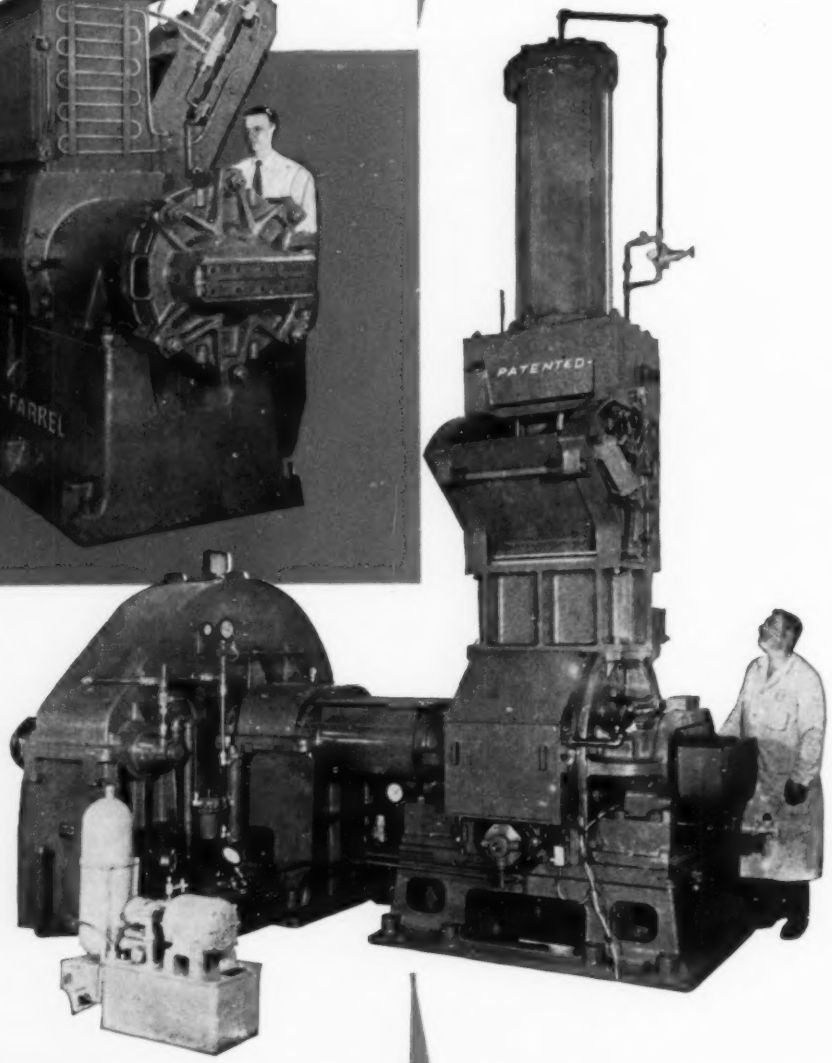
BRIDGE FARREL

EQUIPMENT FOR THE PLASTICS INDUSTRY

(Illustrated below)

Size **3 D BRIDGE - BANBURY MIXER**, in addition to many other new developments, this high horsepower mixer is equipped with roller bearings and the new patented hydraulically operated drop door which facilitates rapid batch discharge and eliminates stock contamination.





(Illustrated above)

PLASTICS EXTRUDER specially designed to automatically receive and extrude the batch from the BRIDGE-BANBURY MIXER under ideal fully controlled thermal conditions and continuously produce strip or rod form from BANBURY MIXER cycles as low as 2 minutes. Such combinations of machines have been designed and developed for various types of plastics and rubber and are the result of a vast background of experience and factory performance in modern methods of manufacture.

BRIDGE FARREL **equipment... acclaimed as the ultimate in production efficiency.**

DAVID BRIDGE & COMPANY LIMITED CASTLETON, ROCHDALE, LANCASHIRE

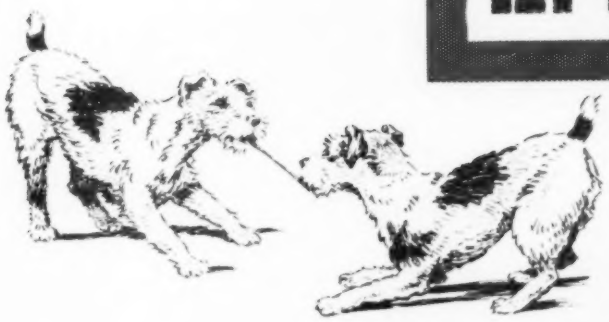
Telephone: Castleton Rochdale 57216 · Telegrams: Coupling Phone Castleton, Lancs.

London Office: Broughton House, 6, 7, 8, Sackville Street, Piccadilly, W.1

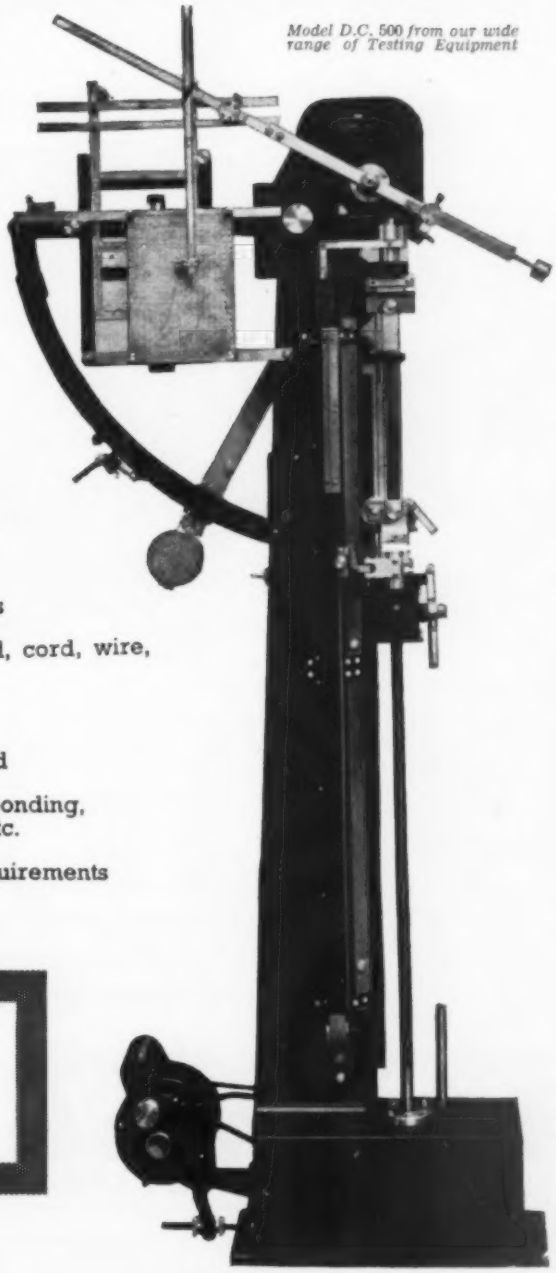
Telephone: Regent 7480 · Telegrams and Cables: Ederaceo, London, W.1

In continuous technical association with FARREL-BIRMINGHAM CO. INC., U.S.A. for over 40 years on the BANBURY MIXER and special machines

LHOMARGY



Model D.C. 500 from our wide range of Testing Equipment



THE TENSION TESTER

for RUBBER, TEXTILES, PLASTICS, etc.

(Built to approved British, French & U.S.A. standards)

- For ring, strip or dumb-bell test pieces
- Special grips for testing plastics, thread, cord, wire, paper, cardboard, sheet metal, etc.
- 3 speeds or variable speed control
- Autographic Recorder fitted, if required
- Suitable also for testing compression, bonding, resistance to tear, shear, perforation, etc.
- Other models available to meet all requirements
- Despatch ex works—2-3 months

COLUMBIAN INTERNATIONAL

are sole selling Agents to the Rubber Industry for Presses, Slug Cutting, Slitting and Re-reeling machines, etc.

made by

T. H. DIXON & CO. LTD., Letchworth, Herts., England

Please address enquiries to the sole U.K. selling agents

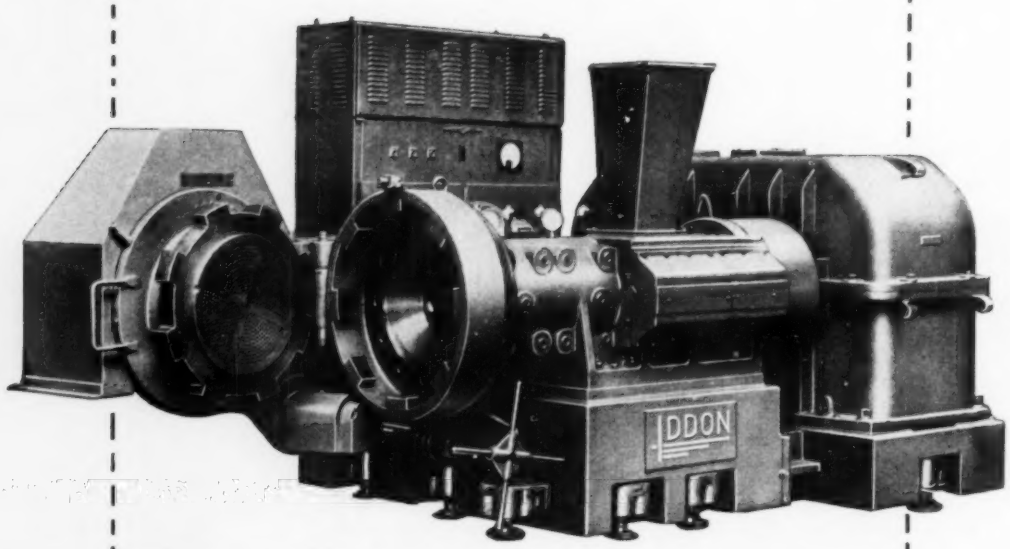
COLUMBIAN INTERNATIONAL

(GREAT BRITAIN) LIMITED

116 CANNON STREET, LONDON, E.C.4. Telephone: Mansion House 5277 (PBE) Telegrams: Noirceur, London

OPERATION "Reclaim"

heavy duty strainer



C.A.10 Heavy Duty Straining Machine, driven through double helical gear unit. Bayonet type locking head fitted with motor driven rotary cutter knife. Complete machine mounted on vibro-insulators.

Consultation Service in relation to all Rubber and Plastics Machinery is freely available.

This machine, which is mounted on Vibro Insulators, is an essential in any plant devoted to the production of high quality reclaimed stock. Feed-roll type Cylinder — quick-lock bayonet type head combined with interlocked fume hood guard and 10″ dia. high production screw.

IDDON
BROTHERS LIMITED

LEYLAND · **LANCASHIRE**
Telephone: LEYLAND 21258 *Telegrams: IDDON, LEYLAND*

LONDON Representative: Mr. J. Summers, Room 16, 4th floor, Abford House, Victoria, London, S.W.1 · Tel.: VICtoria 1488

U.S. and CANADIAN Technical Sales and Service:
THE JOHN WILLIAMS MACHINERY LTD
1868, Mattawa Avenue, Cooksville, Ontario, Canada
Tel: 279-7250

MANUFACTURERS OF MIXING MILLS, PRESSES, EXTRUDING MACHINES, CALENDERS AND AN EXTENSIVE RANGE OF MACHINES FOR RUBBER AND PLASTICS INDUSTRIES

factice

manufacturers of all types of factice

factice

factice

factice

golden · dark · white

Serving the Rubber Industry since 1872

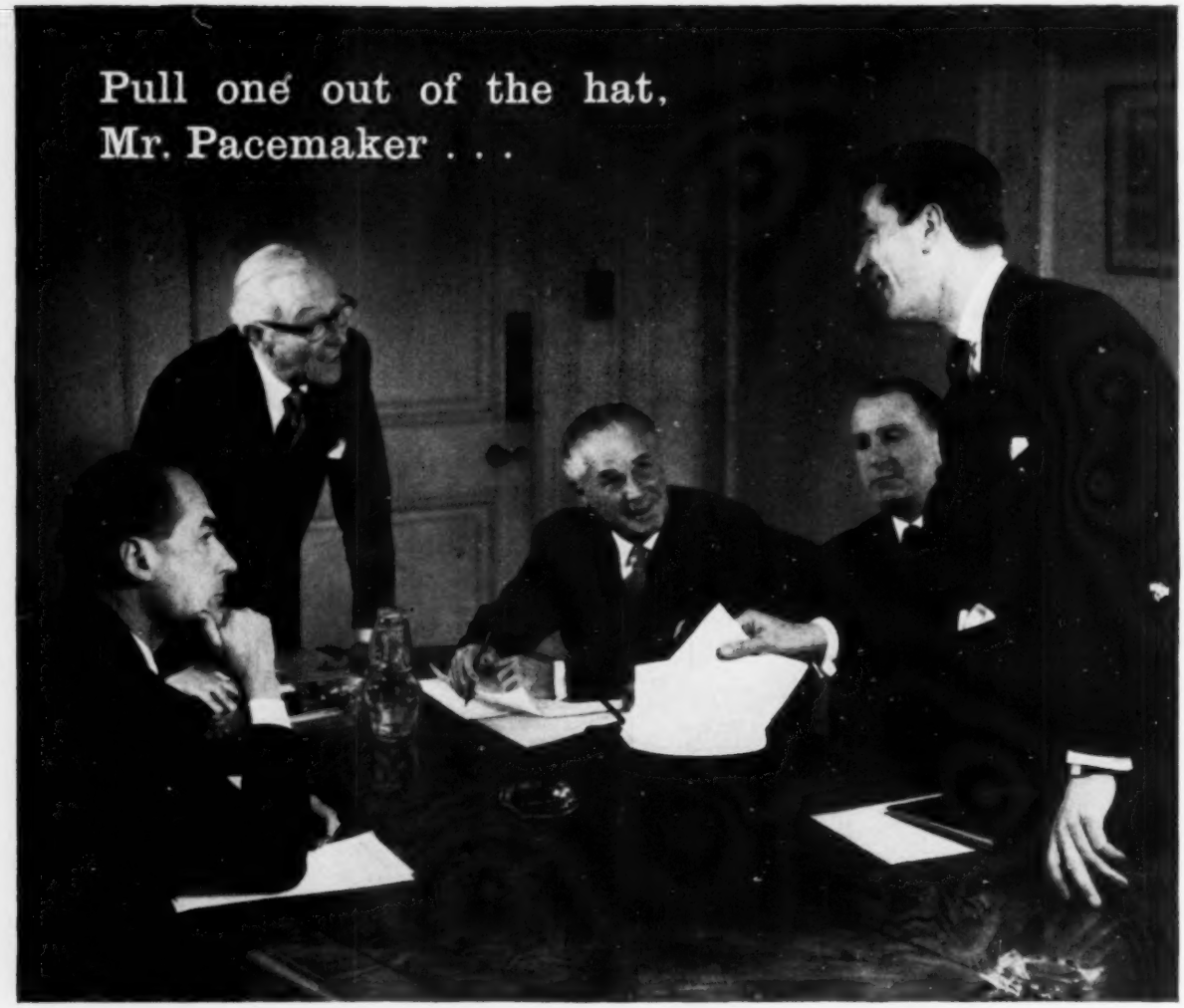
BRR

BRITISH RECOVERED RUBBER & CHEMICAL COMPANY LIMITED

Ashton New Road, Clayton, Manchester

Telephone: East 3241-6 Telegrams: Reclaimed Manchester

Scottish Agent: R. M. Wilson, 227 St. Andrews Road, Glasgow, S.1



. . . show 'em a price from Phoenix!

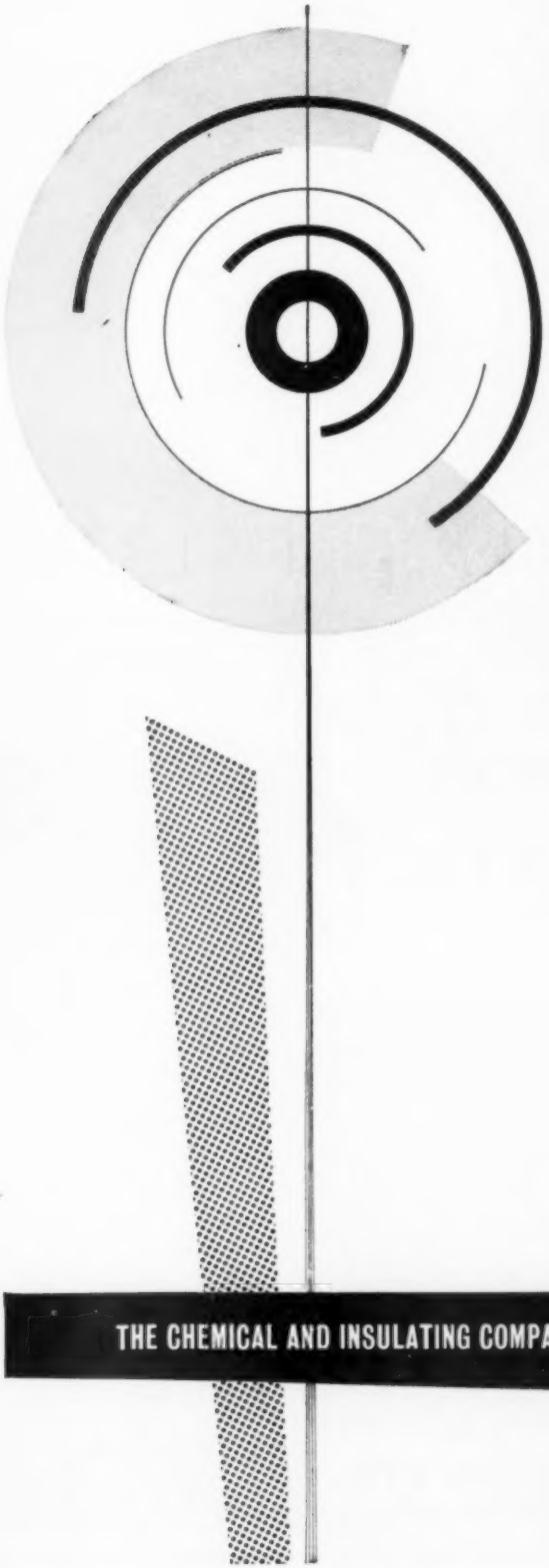
Imagine it. Management meeting. General Manager speaking. "Referring to our last meeting, it looks as though we must very reluctantly turn down the enquiry from Willards. Their cost ceiling is rather low . . ." *Here's your chance! A slight clearing of the throat to attract attention, then speak.* "Err-mmm. Excuse me if I interrupt, Mr. Matthews. Since our last meeting, I have followed up a lead, and I am now very happy to inform you that I have a price for the rubber compound which will allow us our usual profit margin on the components, and still keep us below Willard's ceiling." *Ah! that's got 'em. Old Matthews doesn't seem to believe it . . . pass him the quotation. That know-all Skinner looks really put-out. Chairman's nodding the way he always does when he's pleased. Tell them the rest.* "Firm called Phoenix Rubber Co. Ltd. Seem to be an—er—elastic sort of organisation. Geared to handle the special mixes we want at an economic cost. Yes, Mr. Matthews, I'll have the representative call tomorrow. Thank you sir."

Maybe that's not quite the way your meetings go. But it will still pay you to get in touch with Phoenix — first!

PHOENIX

NATURAL & SYNTHETIC RUBBER COMPOUNDS

Phoenix Rubber Co. Ltd., Slough, Buckinghamshire. **Telephone: Slough 22307/9**



for Rubber Compounding there's nothing to equal DARLINGTON MAGNESIUM OXIDES....

Darlington Magnesium Oxides are available in various grades of reactivity for different compounding needs.

The high reactive grade is especially suitable for Neoprene compounding, since it protects the materials against scorching during mixing and ensures a fairly rapid curing rate during vulcanisation. For S.B.R. compounds the normal reactive grade is particularly well adapted, acting as an activator of the accelerator added to the rubber stock.

Write for full details of Darlington Magnesia Chemicals for the rubber and plastics industries to:

THE CHEMICAL AND INSULATING COMPANY LIMITED Darlington, Co. Durham

The Chemical and Insulating Co. Ltd., Darlington, Co. Durham
A MEMBER OF THE DARLINGTON CHEMICALS LTD. GROUP OF COMPANIES
U.K. Selling Agents: Clifford Christopherson & Sons Ltd.
1 Knightsbridge Green, London, S.W.1

RECLAIMED RUBBER

ALKALI—NEUTRAL—THERMAL
SPECIAL PLANT FOR RECLAIMING
SYNTHETICS ON CONSIGNED BASIS
AQUEOUS DISPERSION RECLAIMS

Established *in 1901*

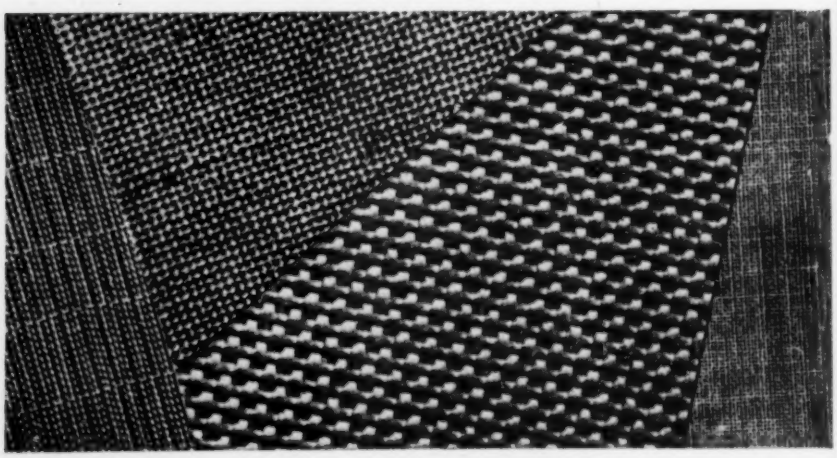
FIBRE STOCKS AND COMPOUNDS
MIRTEX MINERAL RUBBERS

NORTHWESTERN RUBBER CO. LTD.

Telephone : Bootle 5812/6 **LITHERLAND, LIVERPOOL 21** *Telegrams : Rubric, Phone, Liverpool*

Agents for LONDON, SOUTH WALES AND WEST OF ENGLAND: WILFRID SMITH LTD., 16 PHILPOT LANE, LONDON, E.C.3

TEXTILES *FOR THE* RUBBER *AND* PLASTICS INDUSTRIES . . . . . .



PRESTON TYRE FABRIC MFG. CO. LTD.
HIGHER WALTON, PRESTON Telephone: PRESTON 85251 (4 lines)

Reinforcing Fabrics for

HOSE
TYRES
BELTING
SHEETING
FOOTWEAR
PACKINGS
VEE ROPES

RAYON
NYLON
COTTON
TERYLENE

RETREADERS! 50% INCREASE IN OUTPUT — PLUS A REDUCTION IN COSTS!

THE BRILLIANT HERBERT EKN RETREAD PRESS It's been calculated that in the time a conventional vulcanizer requires to cure 4 car tyres the Herbert EKN cures 6 — an output increase of 50%. In actual tests, an old-fashioned, swivel-bolt vulcanizer had a manufacturing cycle of 57 minutes. The EKN did the whole job in 38 minutes.

SAFE AND CERTAIN The laborious extraction of tyres by levers often results in damage to expensive moulds and in tyre injuries. Damaged moulds, of course, spoil the appearance of every tyre. But in the EKN vulcanizer, a special curved roller track carefully strips the tyre from the mould. The operator has only to take it away. And spraying of the mould helps to make the operation easier still.

QUICK AND EASY Moulds are changed in the shortest possible time, and the most difficult part of the work, the lifting of the mould from the heating chamber, is done by the model EKN vulcanizer itself — an amazingly simple operation. To savings in labour add savings in steam, power and space.

HERBERT MACHINERY IS NOW MANUFACTURED IN ENGLAND UNDER LICENCE
Write now for further details to:

BAKER PERKINS Ltd

Westwood Works Peterborough

The uses of Mica powder in rubber manufacture

LATEX FOAM

Mica powder shows advantages over other extenders. It increases compression hardness without undue reduction of other physical properties. The cost of latex foamed products can be reduced by offsetting this increase in hardness, by foaming the latex to a larger volume. Mica powders also facilitate mould release.

LATEX COMPOUNDS

Mica powder produces a marked hardening of latex film, making it particularly suitable for hard casting compounds, adhesives and latex flooring compounds. Mica is also excellent for preventing undue penetration of latex spreading compounds when applied to fabric and other porous bases.

AS A LUBRICANT

Mica powder is ideal with its chemical inertness and plate-like structure, it is equally effective applied either dry or wet, in the form of a slurry water or soap solutions.

SPONGE RUBBER

Mica is particularly effective as a filler. It increases the load bearing properties and also acts as a blowing aid by preventing collapse after moulding.

POLYURETHANE FOAMS

Mica powder increases the compression hardness of polyether and polyester foams. This property offers possibilities in the production of profiled cushions with large cavities thereby lowering the cost of the cushion without lowering the compression hardness.

micafine

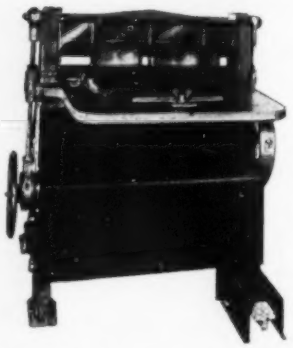
MICA POWDER

micafine limited

MICAFINE LIMITED · RAYNESWAY · DERBY
TELEPHONE · DERBY 61981 (3 LINES)

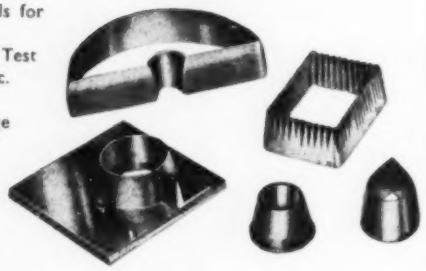
CUTTING AND PUNCHING MACHINERY AND TOOLS

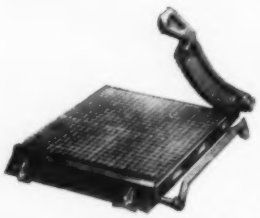
for Rubber, Sponge and Foam Rubber, Plastics, etc.



Model No. 27
POWER GUILLOTINE
Rapid cutting of sheets and strips, also Extruded Material to size.
Sizes 20" and 30".

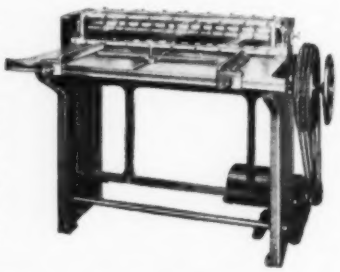
Edge Tools for Shapes, Washers, Test Pieces, etc. Plain or Fancy Edge





Model No. 11
BENCH HAND SHEAR CUTTING MACHINE
Light metal construction, with adjustable Front Gauge. 12" length of cut and larger sizes. Available with inch scale on Side Lay and adjustable back Gauge. *or* . . . with Side Lay and Table marked in half inch squares as illustration.

Model No. 125 R.
ROTARY CUTTING MACHINE
Strip cutting sheets, Cross cutting for Squares, Oblongs, TILES, Adjustable for size. Power operation. Sizes 25½", 32", 38", 52", 60" and 72" widths.



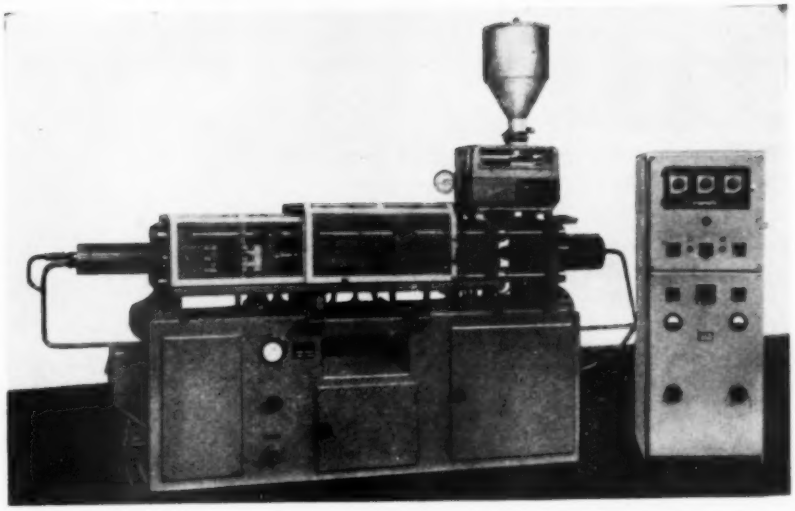
T. KENDELL & SONS LTD.
Established 1840

Telephone: SHOreditch 4782/3/4

French Place, Shoreditch, London, E.1, England

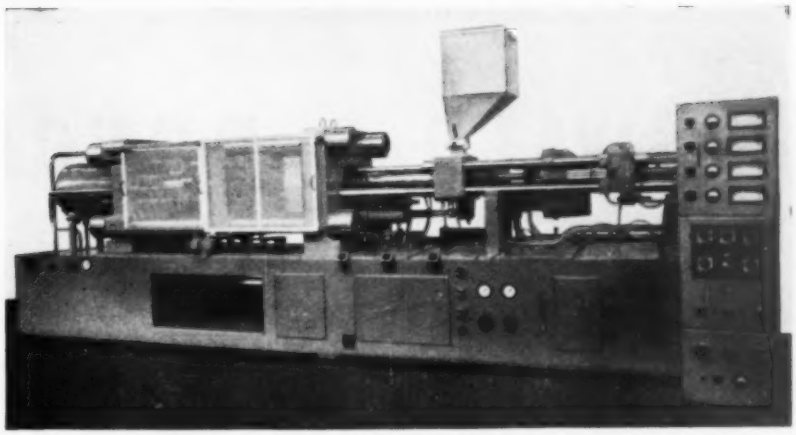
MANY OTHER MACHINES AND TOOLS FOR YOUR TRADE

ENGEL INJECTION MOULDING *Machines*



ESMA S—45

Quick delivery for all sizes of injection moulding machines, fully automatic or hand controlled.



ESMA—Sch 500/1000

Injection machine with pre-plasticiser for shots up to 67½ cu. ins.

U. K. AGENTS

COUTINHO, CARO & CO
HAMBURG

FELBER JUCKER & CO. LTD.

FJ MACHINERY

Brooks House, 48 Upper Thames St., London, E.C.4
TELEPHONE CITy 1087

Rhein-Chemie works for progress

We supply for the rubber industry:

Antidust 1060

A liquid, highly effective separating agent for unvulcanised compounds and extrusions

- Prevents dust in the factory
- Maintains the original colour of the compounds and
- Improves the finish of the final product

Antidust is supplied as a concentrated paste which is diluted with water before use

RHEIN-CHEMIE GmbH, Export Department, Heidelberg

Represented in the U.K. by: **Messrs. Lonabarc Ltd.,**
110 Cranbrook Road, Ilford, Essex

Samples and literature on request

OSWALD & DUNCAN LTD

COTTON AND SYNTHETIC YARNS

AND CLOTHS

FOR INDUSTRIAL PURPOSES

Tyre Fabrics *Belt Ducks*

MAYFIELD MILL · ROCHDALE

Telegraphic Address
OSWALDUN ROCHDALE

Telephone
ROCHDALE 40221

Zinc Pigments

FOR THE **Rubber** INDUSTRY

Orr's Lithopone 28/30% and 60% qualities

Fricker's Zinc Oxide

Orr's Blanc Fixe and Ground White Barytes

PRODUCTS OF IMPERIAL SMELTING

CONSOLIDATED ZINC CORPORATION (SALES) LIMITED · LONDON · S.W.1

Rubber Proofing

OF ALL FABRICS FOR THE WATERPROOF GARMENT INDUSTRY

" AQUACHECK "
CUT TAPES & NON CONS
(biased and straight)

Interlinings for the Rainproof Trade.
Proofed Piece Goods.
Specialists in Proofing for Bags.

Proofing for Ground Sheets, Motor Hoods, Covers for Lorries and Stores, etc.

ALFRED O. FERGUSON & CO. LTD.

WINDSOR MILL, HOLLINWOOD, OLDHAM

Telephone: Failsworth 2206
Telegrams: Nonporous Hollinwood Oldham

London: Bush House, Bush Lane, E.C.4
Telephone: Mansion House 0781

PULVERITE
— the new low volume cost black filler

METALLIC STEARATES
— we welcome your enquiries

WHITING
— Powdered, Precipitated, Activated

FOR THESE AND OTHER RUBBER COMPOUNDING INGREDIENTS CONTACT

WILFRID SMITH LIMITED

16 PHILPOT LANE, LONDON, E.C.3

Telephones: MANsion House 2064—8

Telegrams: Accollyst, Bilgate, London

A TOUGH CHARACTER...

The characteristics of Manosil V.N.3. combine toughness with strength, yet it is no heavyweight. Manosil V.N.3. makes possible the manufacture of low gravity, high quality transparent or coloured articles in a variety of rubbers, both natural or synthetic.

Recent price reductions have also made possible the production of lower cost compounds of improved quality by blending Manosil V.N.3. with cheaper fillers.

MANOX BRITISH BRAND

FIRST CLASS PRODUCTS OFFERED WITH FIRST CLASS SERVICE

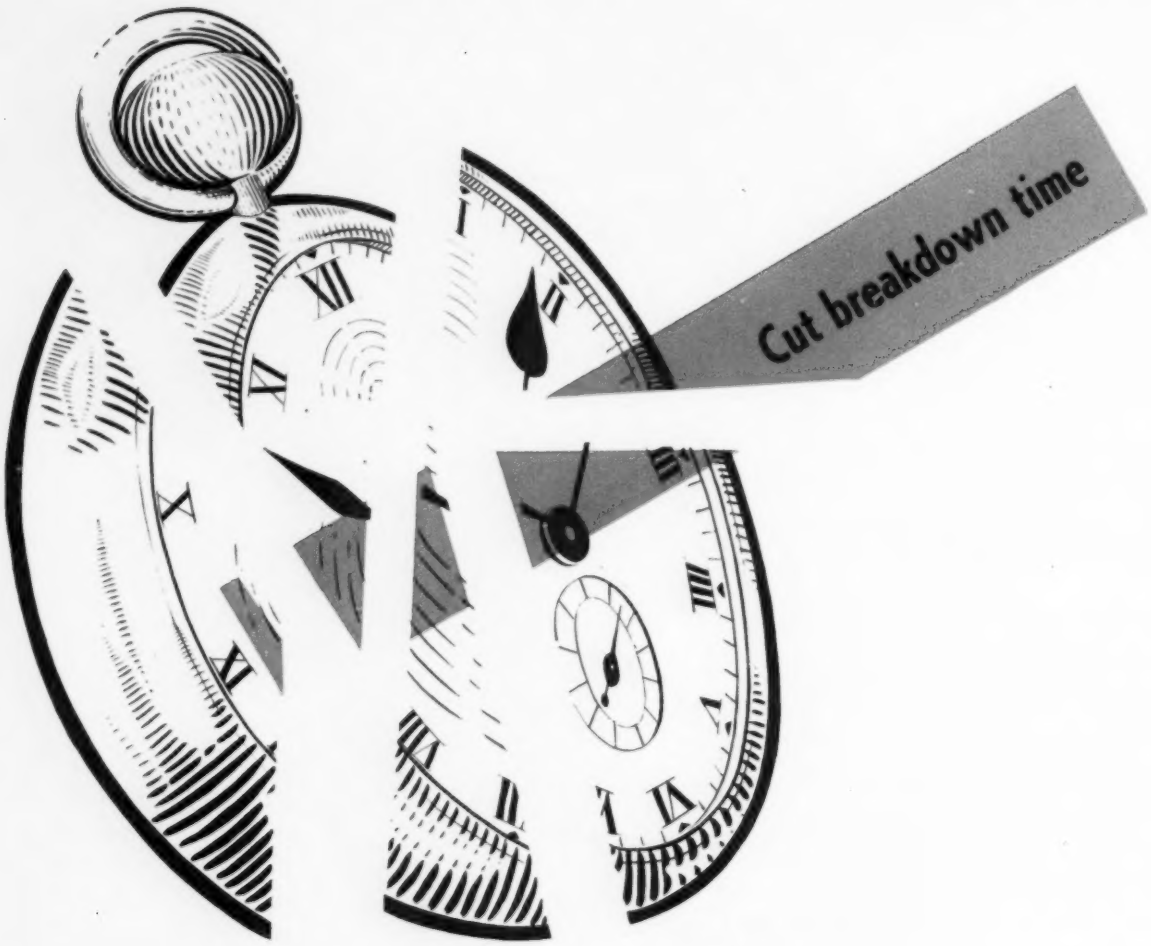
WRITE FOR DETAILED INFORMATION ON:

MANOSIL V.N.3.

HARDMAN & HOLDEN LIMITED

MANOX HOUSE · MILES PLATTING · MANCHESTER 10

TELEPHONE: COLlyhurst 1551 (10 lines)
TELEGRAMS "OXIDE" MANCHESTER



ANCHOR PLASTICISERS

ANCOPLAS LP For sponge, mechanicals, calendered goods and very soft compounds.

ANCOPLAS ER For rapid breakdown of rubber and easy processing of carbon black masterbatches, highly loaded compounds, reclaim stocks and extrusions.

ANCOPLAS OB For solutions, cements and proofing doughs.

ANCHOR CHEMICAL COMPANY LTD – MANCHESTER 11

London Office: Grand Buildings, Trafalgar Square, W.C.2.

Scottish Agents: J. & G. Hardie & Co. Ltd., 178 Fulton Street. Glasgow, W.3.

American Liaison and Service Branch: British Anchor Chemical Corporation, 366 Madison Avenue, New York 17, N.Y.

Editorial Director: J. D. COPEMAN

Editor: PETER RANSLEY

Technical Editor: RICHARD NYE, MA

Consultant Editor: W. S. PENN, BSc

Advertisement Director: EDWARD J. BYFIELD

Advertisement Manager: MICHAEL J. WHELAN

UK Area Representatives

L. Quy, South and West of England and South Wales (Operating from London Office)

A. J. Legg, Area Manager, 55 Lee Lane West, Horsforth, Nr. Leeds. Tel. No. Horsforth 3845. North-East England, Lancashire, Yorkshire and Lincolnshire

E. R. Leaver, Group Advertising Manager, Scotland (Operating from London Office)

W. Brown, Area Manager, 13 Allerton Road, Southport, Lancashire. Tel. No. Southport 5121. Cheshire, Cumberland, Westmorland

E. Burgess, 40 Parkside Drive, Maybank, Newcastle-under-Lyme. Tel. No. 64678, Staffordshire North of the A.5

W. J. Bird, 2 Christopher Road, Quinton, Birmingham, 32. Tel. Woodgate 5804. Derbyshire, Shropshire, South Staffs., Leicestershire, Nottinghamshire, Warwickshire, Worcestershire and N. Wales

Overseas Representatives

Belgium—Albert Milhado & Co., GmbH, Pompstraat 2, Antwerp

France—John Gentry, 150 Boulevard Magenta, Paris X

Germany—Albert Milhado & Co., GmbH, Charlottenstrasse 32, Dusseldorf. Tel. No. 27217

Italy—Massimo Fano, Via V. Monti 14, Milan. Tel. No. Milan 808135

Netherlands—G. Arnold Teesing, Rubensstraat 68, Amsterdam, Z. Tel. No. 727913

United States—Overseas Publishers' Representatives, 29 West 34th Street, New York 1, N.Y. Tel. No. Bryant 9-0794

RUBBER and PLASTICS WEEKLY

Formerly 'Rubber Journal and International Plastics'

Volume 141 IN ITS 78th YEAR No. 23

December 2 1961

Editorial

NOTES OF THE WEEK 895

Articles and News

NEWS BRIEFS 896
ALLEGED POLYTHENE DUMPING 898
USSR OFFICIALS AT R. H. WINDSOR 899
PRODUCING BLOW MOULDING MACHINES 900
FIRST PROOF OF RUBBER'S STRUCTURE 906
FBRAM PRESIDENT'S DINNER 915
PLASTICS MACHINERY DEVELOPMENTS 916
FACTICE IN SBR 918

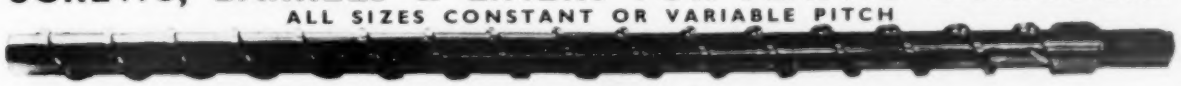
Features

VIEWS AND REVIEWS 910
MEN AND MATTERS 912
THE LEGAL ANGLE 914
PLANTATION NEWSLETTER 920
RUBBER STATISTICS 920
PLANTATION SHARE SURVEY 921
RUBBER MARKETS 922
INDUSTRY INTELLIGENCE 923
SYNTHETIC RUBBER PRICES 924
FUTURE EVENTS 925

Classified Advertisements . . . 926 Advertisers Index . . . 930

MACLAREN HOUSE, 131 GREAT SUFFOLK STREET, LONDON, S.E.1
Grams: 'Buns, Souphone, London' Phone: HOP 5712
Annual Subscription, including Postage: United Kingdom and Oversea, £2 15s.; Index (half-yearly), 10s. per annum extra. Published weekly. Registered at GPO as a Newspaper. Registered for Transmission by Canadian Magazine Post. Entered as Second Class matter at Post Office, Boston, Mass. USA, under the Act of March 3 1879 (Sec. 397 P. L. and R.)

SCREWS, BARRELS & LINERS FOR PLASTIC EXTRUDERS
ALL SIZES CONSTANT OR VARIABLE PITCH



Also manufacturers of

SPIRAL MARKING MACHINES
FOR PLASTIC CABLE IDENTIFICATION

BUNCHING & TWINNING MACHINES
STRANDING MACHINES
PAPER LAPPING MACHINES
PAY OFF & TAKE UP STANDS

JOHN DOCKER & CO. (ENGINEERS) LTD.
CROMWELL WORKS, NORTH FELTHAM TRADING ESTATE, FELTHAM, MIDDLESEX. TEL: FELTHAM 6341
GRAMS: DOCREBUILT, FELTHAM
CABLES: DOCREBUILT, LONDON

CHOOSE VERSATILE NEOPRENE TYPE WX FOR BETTER PRODUCTS AT LOWER COST

CHEAPER COMPOUND COSTS

. . . . . because high filler loadings have little effect on the excellent physical properties of Du Pont neoprene Type WX.
. . . . . because Type WX has good resistance to crystallization and is economical.

CHEAPER MILL COSTS

. . . . . because Type WX does not break down during processing to become excessively soft or sticky.
. . . . . because Type WX is tough
—will disperse pigments quickly and uniformly.

GREATER DURABILITY, COLOUR AND STABILITY

. . . . . because Type WX compounds provide good tensile strengths
. . . . . because Type WX compounds have low compression set characteristics
. . . . . because Type WX makes possible a wide range of colours
. . . . . because Type WX in the raw state has outstanding storage stability over long periods.

IF YOU REQUIRE FURTHER SPECIFIC INFORMATION ON NEOPRENE WX CONTACT YOUR DU PONT REPRESENTATIVE.

NEOPRENE

DU PONT

REG. U.S. PAT. OFF.
Established 1802

BETTER THINGS FOR BETTER LIVING

. . . *THROUGH CHEMISTRY*

For further information on the properties of Du Pont Elastomers please send me "An Engineering Guide to the Du Pont Elastomers".
To: Du Pont Company (United Kingdom) Ltd.,
76 Jermyn Street, London, S.W.1.

NAME .....

POSITION .....

COMPANY .....

ADDRESS .....

Rubber and Plastics Wkly 2/12/61

NOTES of the WEEK

Dynamic Equilibrium

IT is almost exactly a month since the UK Board of Trade and the General Services Administration in USA announced their revised selling structures for stockpile rubber. The effect of these decisions is still clearly printed on the world's rubber markets. In the light of this situation Sir John Hay — whose announcements are always worth the closest attention — assessed the prospect for future sales of natural in his chairman's speech at the annual meeting of Kamuning (Perak) Rubber last week. The statistical outlook, he says, is that there will be a surplus of natural this year amounting to 50,000-70,000 tons (*RPW*, October 7, 531). If the UK and US Governments continue their stockpile sales at the stated rate — which will mean a release of 72,000 tons — then the 1962 surplus will be considerably greater. If actual facts correspond to these estimates then, Sir John considers, there will be no increase in price; on the contrary, it may decline.

But from natural's point of view there is one encouraging factor. When the price of natural slips to the price of the 1,500 grades of SBR the rate of change from the synthetic to the natural product is slowed down. If the natural price stays around the SBR price for a number of months — and looks like remaining stable — it is even possible that there will be a movement from SBR to natural. There is, in fact, a case for saying that, in this period of rapid development in the synthetic field, a low price for natural may be no bad thing in the long run. Through their reorganization policies plantations have, of course, been preparing for the day when natural will have to compete with synthetic on a simple price against price basis. In his speech referred to above Sir John Hay certainly shows no deep-seated concern about the place of efficiently-produced natural in the future: '. . . whatever may be the course of events, this company [Kamuning (Perak) Rubber] is singularly well equipped to continue profitable production at any probable price of rubber'.

The truth is, surely, that too much emphasis has been placed on the competition between natural and synthetic and not enough on their being complementary products. The manufacturer needs both; blends of NR and SR are increasing; research in one field has stimulated research in the other. There will be no final 'battle' between natural and synthetic, but a form of dynamic equilibrium will be reached.

UN Action

THE low rubber prices following the stockpile releases look as if they have stimulated the United Nations Economic and Social Organization into action. On Saturday (November 25) this body asked the International Rubber Study Group to consider a scheme for international compensation in the event of a decline in export earnings resulting from price fluctuations in primary products. Under-developed countries, which depend heavily on primary commodities are the concern of us all—economically as well as altruistically, since they are markets of the future. Under this forward-looking scheme, which the Malayan Government is considering as we go to press, it is proposed that an International Development Fund under UN sponsorship should be set up. The basis for calculating the risks involved by member countries would be the difference between the annual average export earnings of the country concerned and the actual export earnings of that country during recent years. It is proposed that compensation should be subject to a maximum of 50% of the claims.

Polythene: Formal Consideration

LAST week we commented on the chain reaction initiated by the recent French decision to apply an anti-dumping duty to a particular source of US polythene. At that time a number of UK firms, led by I.C.I., were making representations on the same subject to the Board of Trade. Now comes a formal notice from the Board of Trade that it is 'considering an application for the imposition of an anti-dumping duty against bulk imports of polythene from USA'. This is, of course, no more than a recognition that there is a case to be considered, and the usual period has been allowed for objections or other representation (open until December 8).

A significant paragraph in the notice says that the application 'may be extended to include other countries supplying such products to Britain at prices which appear to be dumped or subsidised'. An investigation into allegations of anti-dumping is usually a long and tedious procedure — involving semantics as well as economics — and it is to be hoped that this quick initial reaction sets a procedure for the operation — in the interests of all the parties concerned.

NEWS *Briefs*

BUNA HULS PRICES DOWN — US CUSTOMS NOT FAIR TO CANADA — JAPANESE HD POLYTHENE PLANT ON STREAM — TYRE PLANT FOR INDIA

●**Columbia** — Some 60 firms in Columbia are now reported to be manufacturing plastics, chiefly in Bogotá, Medellin, Santa Marta, Cali and Barranquilla. Annual output is valued at 120m. pesos. Nearly all raw materials are imported.

●**India** — A new tyre factory which will produce 750 tyres daily for passenger cars, buses, trucks, tractors and 'animal-drawn vehicles' has been opened in Ballabhgarh (Punjab) by Dr S. Radhakrishnan, the vice-president. The project is a joint venture of the Goodyear Tire Co. and of Indian shareholders. Some 60m. rupees have been invested in the plant.

●**Indonesia** — In the first nine monnths of 1961, Indonesia exported to the UK rubber to the value of more than £2½m., of a total export figure to the UK of £5¼m.

●**Ceylon** — A new sliding scale for the rubber export duty, varying with the movement of London prices of rubber, was introduced in Ceylon on November 26. The duty is worked out on a basis of the previous week's London prices — at the present London price of sheet rubber the new duty is approximately 14 cents. The new scheme is expected to help the producer obtain his minimum price in adverse conditions while enabling the Government to realize higher revenue in times of boom.

●**United States** — Canadian manufacturers and representatives of Japanese producers of rubber soled footwear, including storm wear and canvas topped shoes, told the Tariff Commission in Washington that a proposed custom definition of their products was unfairly restricting their sales in USA. Spokesmen for the foreign producers said that they offered a larger variety of footwear to the women's trade than did US manufacturers who offered only a 'narrow' range of products. There were often no comparable US-made articles with the result that the imported products were assessed 'at the highest possible value'.

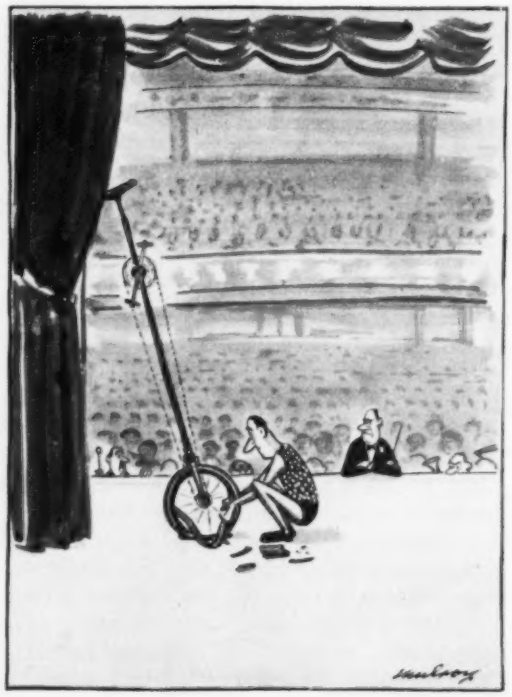
●**Puerto Rico** — A $7m. plant for the production of phthalic anhydride is to be erected in Puerto Rico and is scheduled to start production late next year. The plant will be operated by Stephen Carbide Inc., a subsidiary of Stephen Chemical Co. An agreement has been signed between Stephen and the Puerto Rican firm Commonwealth Oil Refining Co. Inc., for the supply of naphthalene to be used as starting material.

●**West Germany** — An agreement has been signed between Farbwerke Hoechst, its subsidiary Knapsack-Grisheim and Union Rheinische Braumkohlen Kraftstoff under which Kraftstoff is to build a cracking plant. This will be at Wesseling near Cologne and will produce ethylene and propylene. Annual capacity will be 70,000 tons of ethylene and the plant is due on stream in 1963. Most of the output will be purchased by Hoechst.

●**United States** — Production at the General Tire and Rubber Co.'s chemical division plant near Akron, Ohio, was halted on Tuesday (November 27) by a strike of about 75 members of the International Chemical Workers Local 419. The workers went on strike when the company-union contract expired without agreement on the wage provisions of a new contract. Negotiations are continuing. Although the plant manufactures basic chemicals for rubber products and paint latices, a General Tire Co. spokesman said the strike will have 'very little if any' effect on the company's other operations.

●**Japan** — Furukawa Chemical's high density polythene plant at Kawasaki recentiy went on stream. Capacity is rated at 10,000 tons. This brings Japan's hd polythene capacity to 32,000 tons a year, Mitsui Chemical producing 12,000 and Showa Yuka 10,00 0tons, but the production this year looks like being 5-6,000 tons less than this. 1961 consumption is expected to be 28,000 tons.

●**West Germany** — A cut of about 5% in its synthetic rubber prices was announced early this week in Marl by Bunawerke Hüls GmbH. The company, one of the largest producers of synthetic rubber in Europe, said that the main type produced — Buna Hüls 150 — will now be priced at 211.50 marks per 100kg. (224.50 marks previously) and that for Buna Hüls 302 — the most important oil-containing type — 172 marks per 100kg. (181 marks previously). This is the second cut in price this year, the company stated. No reason for the cut was given although indications are that foreign competition, especially from the USA, made the latest price reduction necessary.



THIS IS
INTOL
SYNTHETIC
RUBBER
IN FOOTWEAR

INTOL in shoes. In light shoes, heavy shoes, work shoes, play shoes. INTOL fashionable, INTOL plain, INTOL coloured. To manufacturers of footwear and to manufacturers in every industry INTOL SB Rubber has these advantages: stable price, consistent quality, assured, punctual delivery from stock. INTOL is the only SB Rubber manufactured in bulk in Britain, it is produced by I.S.R. for Britain's rubber users and backed by an active Technical Service. This Service is available to manufacturers in every industry; it tests and compiles its findings into useful production reports, provides valuable compounding and processing data, it treats each customer individually and confidentially, it comes to you and costs nothing. You can use INTOL: contact I.S.R. and find out how.

The International Synthetic Rubber Company Ltd.
Southampton · Tel: Blackfield 3141 · Cables: INTOL HYTHE
London · Tel: Langham 0711 · Cables: INTOLRUB LONDON
Manchester · Tel: Pyramid 1241 · Cables: INTOL MANCHESTER

Alleged US Polythene Dumping

BOARD OF TRADE GIVES FORMAL NOTICE

A FORMAL notice has been given by the Board of Trade that it is considering an application for anti-dumping legislation against bulk imports of US polythene.

Last week I.C.I. was joined by Monsanto Chemicals and Union Carbide in making representations to the Board of Trade (*RPW* November 25, 855).

Recently a French anti-dumping duty was applied against a particular source of US polythene.

Full Text

The full text of a Board of Trade press notice is:

'The Board of Trade give notice that they are considering an application for the imposition under the Customs Duties (Dumping and Subsidies) Act, 1957, of an anti-dumping duty on polythene in blocks, lumps, powders (including moulding powders), granules, flakes and similar bulk forms imported from the United States of America. The application may be extended to include other countries supplying such products to Britain at prices which appear to be dumped or subsidized.

'Any representations which interested parties may wish to make in connexion with this application should be submitted in writing not later than December 8 1961. A statement of the applicants' case will be made available to all interested parties who wish to make representations in the matter if they are prepared to give an undertaking to treat the information contained therein as strictly confidential and to allow their comments to be passed to the applicants for reply. Requests for a statement of the case, together with an undertaking in the terms set out above, should be addressed in writing to the Board of Trade, Tariff and Import Policy Division, Room 3139, Horse Guards Avenue, London, S.W.1'.

See page 895.

New Plastic Laminate from Canada

A new type plastic laminate that could have an important impact on the whole laminate field has been developed by a small Canadian research team at St. Jean, Quebec.

Cyanamid of Canada expect the new product to broaden market applications for plastics laminates. The laminate was developed for decorating vertical surfaces and offers a new-type finish as well as price advantages over conventional laminates, it is claimed. The company sees a potential in wall coverings, furniture, partitions, doors.

Polyester Dye

A new orange dye of high tinctorial value for use on polyester fibres has just been placed on the market by Eastman Chemical International AG, Baarerstrasse 115, Zug, Switzerland.

Because of its economy, Eastman expects that the new dye will be used frequently in medium to dark combination shades.

Called Eastman Polyester Orange 3RLL, the new dye produces a bright red shade of orange on polyester fibres.

Submarine Power Cable Contract for BICC

British Insulated Callender's Cables Ltd. has received a contract valued at approximately £200,000 from the Trinidad and Tobago Electricity Commission, Port of Spain, Trinidad, to manufacture and install 24 statute miles of submarine gas-filled power cable together with terminations and accessories.

Made in Manchester

The manufacture of the cable will be undertaken by British Insulated Callender's (Submarine Cables) Ltd., at Trafford Park, Manchester, and the installation by British Insulated Callender's Construction Co. Ltd.

The large resources of natural gas which have been developed in the south of Trinidad and in the Gulf of Paria have provided a cheap source of fuel for the generation of electricity. This has resulted in a considerable increase in the demand for power.

Marbon Chemical Drops ABS Prices

REDUCTIONS in the price of Cycolac ABS from 10 - 14% in truckload quantities, have been announced in USA by Marbon Chemical Division of Borg-Warner Corp., Washington, West Virginia.

At the same time Anchor Chemical Co. Ltd. has announced that UK prices now applying are: Cycolac brand natural grades 3s. 8½d. (42 cents) lb., standard and custom colours 3s. 10½d. (46 cents) lb., and metallics 4s. 1d. (49 cents) lb. Previous prices for the three categories were 4s. 0½d. (49 cents), 4s. 2½d. (51 cents), and 4s. 5½d. (54 cents).

Increased production facilities and skills are primary reasons for the price reductions, said Marbon president, Robert Shattuck. He predicted that Cycolac brand plastics would make even further inroads as a replacement for metal and other materials in the communications, transportation and appliance industries. ABS applications include telephones, typewriters, automobile parts, refrigerators and small appliances.

The Borg-Warner Corp, also announces a new line of medium impact ABS thermoplastic resins. Called Cycolon, this medium impact ABS material was developed in the same laboratories which introduced Cycolac to the industry six years ago.

Cycolon is designed to meet applications requiring a plastics with general ABS physical properties but not the high impact performance of Cycolac polymers.

Dunlop Introduce New Tyre at Smithfield

A NEW rear tyre for tractors which gives twice the mileage on hard roads and a mechanical disc brake for agricultural trailers and implements will be exhibited by Dunlop for the first time at the 1961 Smithfield Show (Stand No. 380), at Earls Court, running from December 4 to 8.

The new tyre has twice the life on hard roads and very good tread life on soils. The drawbar pull on heavy soils is excellent and on light soils, more than adequate for normal conditions. It has good self-cleaning properties on sticky soils and a very stable sidewall on conditions of high torque.

There will also be land/road and ribbed implement tyres for combines, balers and threshers, and a range of tractive implement tyres suitable for garden tractors and small cultivators.

Disc Brakes

Designed and manufactured by the Dunlop Brake Division, the mechanical disc brake for agricultural trailers and implements is new to the Smithfield Show. It is intended primarily for trailers and implements with an axle load of up to 3 tons. An attractive feature of the brake is its automatic adjustment for wear in the friction pads.

USSR Officials at R. H. Windsor

UK RUSSIAN TRADE INCREASING — 'BUT NOT ENOUGH'

V. I. RODNOV, recently-appointed Soviet Trade Representative in the UK, visited the Chessington works of R. H. Windsor Ltd. on November 23. He saw various aspects of injection moulding machinery production, and was accompanied by N. S. Tsarev, senior Technashimport representative in the UK, and Mr Koumlev and Mr Pelevin, technical representatives.

Later, at a press conference in London, Mr Rodnov would not say whether there was a further Soviet machinery order for Windsor in the offing. The visit, it was indicated, was an expression of the good relationship which Windsor had built up with Russian organizations. On orders so far received from Russia, Windsor will be delivering machinery to the country up to 1963.

Mr Rodnov said that he thought British plastics machinery 'very capable' of meeting any kind of competition in the world.

Consumer Slant

Asked whether plastics machinery in the USSR was slanted towards consumer or industrial products, he indicated that it was used mostly for manufacturing consumer goods.

Trade between the UK and USSR was increasing, he said — in 1960 it was 38% more than in 1958. This year so far the figures showed a 20% increase on 1960.

But this, he thought, was not enough. Russia was buying complete plants, machinery and other products from the UK — but it could not sell all the products it wanted to to the UK. He brought up the question of Russian oil, stressing that trade should be a two-way affair.

Trade Development

Mr Rodnov stated that trade with Italy, Japan and Western Germany was developing much more rapidly than trade with the UK, because Russia could sell more to these countries.

Windsor executives who accompanied Mr Rodnov and his party at Chessington and London included R. E. G. Windsor, chairman and managing director, directors Gordon Windsor and Peter Windsor, and B. J. Pidgeon, export sales manager.

Plastics Sales Up 13%

According to figures published this week by the Board of Trade, net sales of plastics materials in the UK, in the third quarter of 1961, were 13% higher than in the same period last year.

This increase was largely accounted for by polystyrene, polyolefines and pvc. Net sales of polystyrene were 24% higher than a year ago, polyolefines 40% up and pvc 12%.

Exports in the third quarter were slightly below the levels reached in the first half of the year, but were well above the figure for the corresponding quarter of 1960. Imports were little different from the first and second quarters and well below the 1960 average. Full details and figures will be published in the December 9 issue of *RPW*.

Largest Computer

The largest and most up-to-date computer system in the Netherlands is now in operation in the central offices, in The Hague, of the Royal Dutch/Shell Group of companies. Consisting of an IBM 7070 computer coupled to a smaller IBM 1401 'satellite', it processes a vast amount of information needed in the companies' oil, chemical and polymer operations in Holland and elsewhere.

At present applications include planning and design of new refinery and other plant, elaboration of exploration data, calculations connected with laboratory research work, financial reporting and administration of wages and salaries.

Union Oxide

Union Oxide and Chemical Co. Ltd. which recently moved into the new offices of its parent company, C. Tennant, Sons and Co. Ltd., at 9 Harp Lane, Great Tower Street, London, E.C.3, announces that its business has been merged with that of the chemical dept. of its parent company.

Trading is now being carried on as the 'Union Oxide and Chemical Division of C. Tennant, Sons and Co. Ltd.'

Trieste Plastics

The International Samples Fair of Trieste is organizing a Plastics Division for the 14th Trieste Fair to be held from June 21 to July 5 1962.

This section will cover products representing all the activities connected with the plastics industry; raw materials, processing methods, equipment and machinery, and finished products.

Damerham Pipe Group Chairman

R. L. H. Damerham, technical director of Durapipe and Fittings Ltd., has been elected chairman of the new Thermoplastic Pipe and Fittings Group of the British Plastics Federation. Initial membership of the group was stated at the recent inaugural meeting to be 20. Membership is open to firms engaged directly in the production of thermoplastic pipe or pipe fittings.

Mr Damerham, who also chaired the Federation's former pipe fittings sub-committee and is UK delegate to the International Standards Organization, has actively campaigned during the last few years for closer integration in the pipe and fittings section of the industry.

This extension, recently opened at the Ekco Works, Southend-on-Sea, houses the Ekco Plastics technical and administration staff whose previous offices are being used for further factory expansion. The new building provides an extra 14,000 sq. ft. of floor space

Producing Blow Moulding Machines

115 YEARS OF ENGINEERING EXPERIENCE

EMERSON WALKER LTD. have been marine engineers at Gateshead since 1846. It cannot be claimed that they have been making blow moulding machine tools since that time or even equipment for the plastics industry in general, but their long engineering experience is obviously a first-class background for the production of any engineering product.

Emerson Walker have recently signed an agreement with Martin Rudolph of Velbert, West Germany, to manufacture and sell under licence, in Britain and the Commonwealth, Martin Rudolph plastics fabricating machines. Developments by Emerson Walker have resulted in a range of Emerson-Rudolph blow moulding machine tools which can produce blown plastics items ranging in size from 61cu. in. to at least 24cu. ft.

The engineering atmosphere of the company at Gateshead is very apparent. The extensive engineering shops are completely equipped to manufacture most of the components required for a blow moulding machine. This even includes making the steel itself and casting it into its appropriate components. The company must be almost unique in the country from this point of view and its iron and steel casting activities are so well known that the factory is known locally as 'The Forge'.

Apart from the obvious experience as marine engineers which Emerson Walker can bring to bear on their plastics machinery products, they offer a 24hr repair service for breakdowns anywhere in the country. In addition, they are used to producing equipment to designs which suit the customer rather than attempting to impose designs on customers, and this attitude is reflected in their plastics as well as their marine work.

Outstanding Features

The Emerson-Rudolph machine tools, as improved and developed by Emerson Walker, have all the characteristics of conventional blowing machines. In addition, however, they have their own special features, some of which are unique.

One of the most important Emerson Walker features of the machine is the variable daylight which is available to give the machines much greater flexibility and capacity. For example, the original Martin Rudolph BA60 model officially is only capable of producing articles with a volume capacity of 80 litres, but with the variable daylight, double this capacity can be achieved. The extruder is designed to allow this sort of thing to be done. On the Emerson-Rudolph BA60 machine, the maximum daylight is 41in., and the maximum mould which can be accommodated is 39in. x 22in. x 16in. Some other companies' machines are fitted with a variable daylight up to about 20 gallons capacity, but above this size the Emerson Walker development is unique.

The large capacity of the machines has been achieved by the use of a storage head employing an hydraulic ram to eject the material in the form of a parison. This means that plastics tubes of large size can be extruded very rapidly which is not possible using the extruder without a storage unit.

Another advantage of the machine lies in the ease of cleaning. This is an obvious instance where the marine engineering background creeps in and a number of davits are provided to allow easy removal of various parts. It is recommended that cleaning takes place at least once a month because, as with any machine, there is danger of small particles of material being trapped at various points and eventually degrading. Prevention is always better than cure and a regular cleaning schedule should be adopted.

A valuable feature of Emerson Walker's service as distinct from their products is the question of installation. They actually install the machine tool themselves and get it into a fully operational condition before the contract is deemed fulfilled. Moreover, they will take operators from their customers and give them training in their own works.

A detailed specification of the range of Emmerson Walker's machine tools is given in Table 1.

The smaller machines (Martin Rudolph BVA1 to BVA5) are more normal type machines and are fully automatic. In the case of the BA20 model, a special storage head has been developed which allows a continuous working cycle of extruder and blowing unit to be maintained. In the case of the BA60 model, the standard machine incorporates a storage head and the feature permits the accommodation of quite small and large components which is of the greatest importance and fairly unusual in plastics moulding machines.

All the machines have three basic units — extruder, ram head and blowing unit. With the larger machines the extruder extrudes continually into the heated storage head and when this has received its predetermined load, the material inside it is ejected through the head in the form of a parison. The extruder, storage unit and head are heated and thermostatically controlled so that there is no danger of overheating.

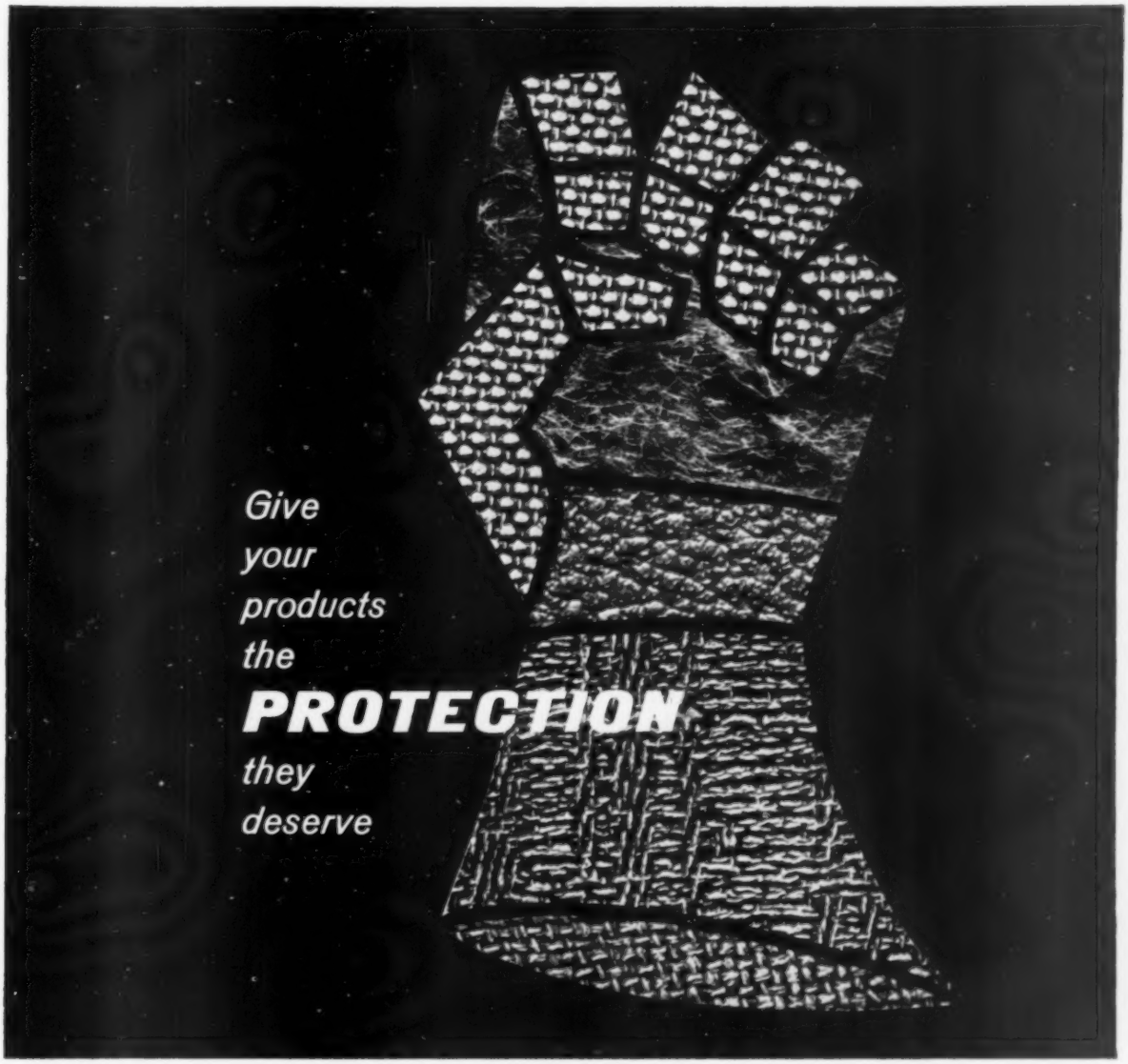
Extruder Unit

A peculiar feature of all blow moulder manufacturers is that they say very little about the extruder. This is a very important feature of the machines and as much care and attention is needed in designing these units as the blow moulding equipment itself. Emerson Walker produce the extruders themselves.

One of the standard items of equipment with the extruder is the automatic feed. A delivery tube is inserted in the bag of material and this conveys it to the hopper in which there is a device for stopping the flow when

TABLE 1
BLOW-MOULDING MACHINE SPECIFICATIONS

	Martin Rudolph		*Emerson-Rudolph*			
	BVA 1	*BVA* 5	*BA* 20	*BA* 60	*BA* 100	*BA* 200
Volume of moulding, nominal, cu. in.	61	305	300–3,400	1,200–10,000	10 (cu. ft.)	20 (cu. ft.)
Output/hour (number of units)	250	60	60–20	40–10	6	6–4
Stroke, in.	19.7	19.7	23.5	31.5	39.4	39.4
Platen within tie bars, in.	11.8 × 7.9	11.8 × 7.9	21 × 19	23 × 27	27 × 31	37 × 39
Extruder, dia. in.	1.57	2.36	2.36	3.54	3.54	4.72
Length of screw (xD)	15D	18D	18D	18D	18D	18D
Extruder output, lb./hr. nominal	22	100	100	200	200	400
RPM of extruder, infinitely variable	15–90	15–90	15–90	15–90	15–90	15–90



MYSTOX rot-proof

On test, under all conditions, MYSTOX formulations by Catomance stand out as by far the most practical and versatile rot-proofing agents.

And the specification MYSTOX assures you of much more than effective proofing alone. In addition, you benefit from the specialised Catomance service, the technical representative team whose job it is to give you necessary advice on individual products, the Catomance Laboratories that will provide the answer to special formulation problems as well as pass on to you the benefits of routine analysis and biological testing. Give your products the protection they deserve—MYSTOX by Catomance.

MYSTOX

Pentachlorophenyl Laurate rot-proof for textiles, packaging materials, canvas and cordage, PVC and rubber, electrical insulants, paper, timber ■ protection against all rotting organisms . . . bacteria, fungi, insects ■ non-toxic, non-corrosive ■ no objectional colour or odour.

MYSTOX by **CATOMANCE** helps proof a good product better

CATOMANCE LTD

94 BRIDGE ROAD EAST • WELWYN GARDEN CITY • HERTS • TEL: WELWYN GARDEN 24373

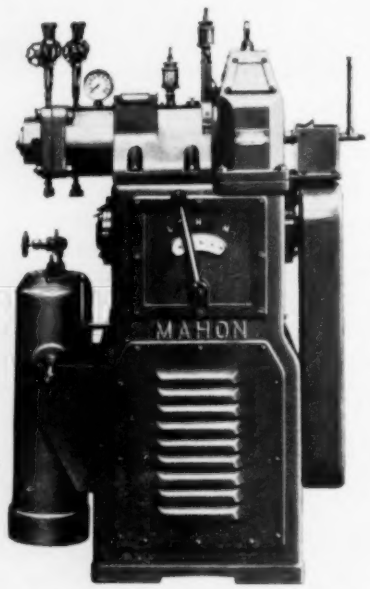
To brighten
and bring out all
the best in rubber
be sure to specify

MACKECHNIE
BRAND
LITHOPONE

McKECHNIE BROTHERS LTD.,
Lithopone Works, P.O. Box 4, Widnes,
Lancs. Telephone: Widnes 2611

Branch Sales Office: 14 Berkeley Street, London, W.1 Telephone: HYDe Park 8841?

HALSTEADS ENGINEERS (LEYLAND) LTD.
LEYLAND, LANCASHIRE



The machine illustrated is our 'Mahon' 1½" rubber extruder with enclosed motor drive and three speed gear-box. — Ref. No. R.E.1000

- COMPACT AND ROBUST
- FLOOR SPACE ONLY 20" x 18"
- SCREW & LINER EASILY REMOVABLE
- OVERSIZE THRUST BEARING
- HIGH QUALITY MATERIALS & WORKMANSHIP

Can be supplied with either tangential feed as shown or our improved roller feed

VERY ATTRACTIVE PRICE

Other sizes up to 3½" dia. screw

HALSTEADS ENGINEERS (LEYLAND) LTD. LEYLAND, LANCS — PHONE: LEYLAND 21529

the hopper is full and restarting it when a given amount has been removed.

The operator is not, therefore, required to man-handle bags of material to a loading platform. An obvious development, long delayed, which must surely be adopted in the near future is the bulk delivery of moulding materials, particularly the various grades of polythene. A container with two or three tons of material would keep a blow moulding machine going for a long time without attention.

The liner of the extruder will cater for almost any material since it is made of Xaloy. The screw has an L/D ratio of 18:1. Twelve pitches are utilized for the feed section with a comparatively deep flight and five for the metering section with a comparatively shallow flight. There is a compression ratio of approximately 2.5:1.

This general purpose screw can be used for ld and hd polythene, polypropylene and plasticized pvc. Experiments are also being conducted to see if it is satisfactory for abs.

The storage cylinder ram is hydraulically operated at a pressure of 3,000psi, suitable for all possible requirements. In connexion with this, an important feature of the machine is the interchangeability of ram sizes which gives the machine much greater versatility.

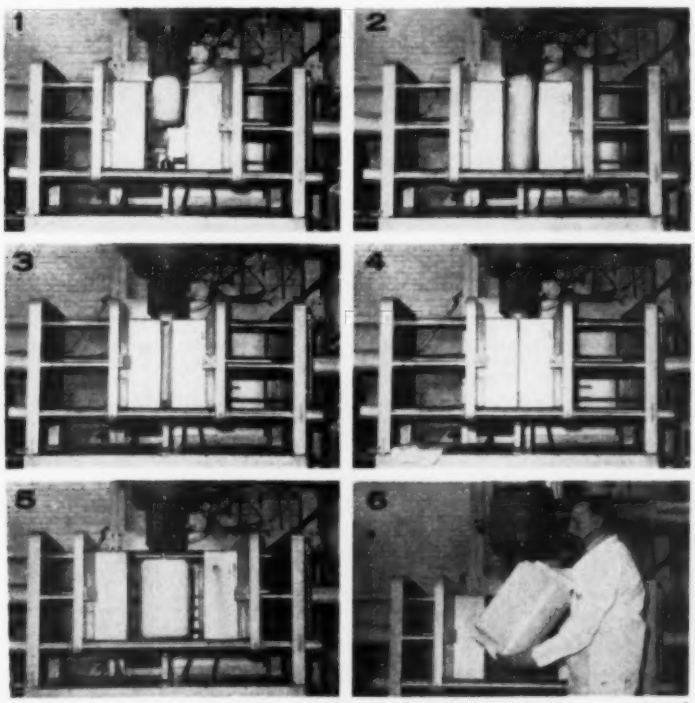
The ram head and die are very well designed. One of the frequent snags with blow moulding equipment of this sort is the fact that the melt has to travel round a right-angled bend during which process it is split. The welding together of the parts is not always perfect and results in rejects. The Emerson Walker machines are free of this fault and special steps have also been taken to ensure that no stagnant pockets of material exist. At the start of production runs some weld marks may be seen for the first two or three shots but these rapidly disappear when optimum conditions have been established.

A cutting knife associated with the closing of the mould conveniently nips off the parison. A locking pressure of at least 25 tons is available to hold the mould of the BA60 machine together and this point must be watched carefully. Because of the possibility of making really large articles on these machines, the pressure exerted by the blowing of the moulding could approach that of the locking force and this must be taken into account when working out the size of article to be produced.

On the BA60 machine, the standard diameter of parison obtainable is 5in. to 7in.; however, special dies can be provided to extend this range. The use of larger dies will mean that less blowing is necessary to achieve the shape of a large article with less variability in wall thickness. In this connexion it may be noted that excessive thinning may take place if the mould is closed too quickly. Much work has been carried out by Emerson Walker on optimum moulding conditions and it has now been fairly well established that hd polythene requires a blowing pressure of 9 atmospheres and ld polythene a pressure of 6-7 atmospheres.

Although a single head is normal, it is possible to supply double or treble heads. Experience has shown, however, that the use of long manifolds brings many troubles in its wake, particularly with 'unfills'. A double head is therefore recommended as the maximum and this is obviously valuable in speeding up production.

The mould used can be very inexpensive. Only female moulds are required and they can be of low melting alloys or even cast epoxy resins. At the moment, however, Emerson Walker are using cast-iron moulds which have been sand blasted and which are made in their own works. The finish is surprisingly good, the moulds comparatively inexpensive and a big extension of the use of this type of mould is anticipated. With this object in view, the company is intending to extend its mould making facilities.



1. Parison extrusion commences. 2. Parison extrusion completed. 3. Mould closing on parison. 4. Mould closed during blowing. 5. Mould opened after blowing. 6. Completed moulding removed *(finished jerrican pictured on page 904)*

Future Developments

The policy of the company is one of continuous development. Although the machine tools are based on Martin Rudolph designs, they are introducing detailed improvements from time to time so that the machines can truly be called Emerson-Rudolph with their own characteristics.

Although the specification given in Table 1 refers to the maximum size machine as the BA200, a BA500 is contemplated in the near future. This will use a double storage cylinder and ram allowing the manufacture of very large containers. At the moment a conservative estimate for this is 150 gallons, but it is more than likely that this figure will be greatly exceeded.

Another development which is contemplated will give a much higher rate of output. It will employ one large extruder in combination with a turntable fitted with six blowing units. This means that the rate of blowing can be speeded up because the mould is then taken away from the blowing station and cooled separately. The rate of cooling is, of course, a major limiting factor on all blow moulding machines and this is one method of overcoming the difficulty. Whether or not this sort of

technique is adopted by an individual customer will depend very much on the heat capacity of the mould. If it is small and cools off quickly, then a unit of this type will be of no value. If it is large, however, and takes a long time to cool, then a big speed up of production can be achieved. At the same time, more moulds are required so that economics will be the final criterion of whether or not this technique is widely used.

Materials

It should be stated at once that one of the few materials for which the normal Emerson-Rudolph machines are not suitable, is rigid pvc. This is not because of any defect in the standard machines, but because of the material storage technique which would not be suitable for pvc materials.

On the other hand, the machine is ideally suitable for both hd and ld polythene and polypropylene can also be satisfactorily blown.

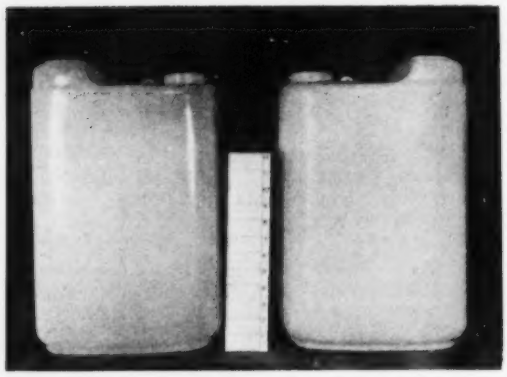
As a compensation for the inability to handle rigid pvc, Emerson Walker are carrying out some development work on the blow moulding of abs polymers. These materials have reasonable flame resistance, weathering properties almost as good as rigid pvc, they are non-toxic, do not decompose in the machine and can be solvent welded. In other words, they may provide a reasonable substitute for rigid pvc and also have advantages over the polyolefines which are not flame resistant at all and cannot be solvent welded.

Range of Products

All the common objects can be produced on the Emerson-Rudolph machines. Typical examples include petrol tanks, carboys, jerricans, cisterns, beer barrels, drums, containers, liners, buckets and dustbins, the latter complete with lids.

The scope of blow moulding machines, however, is much greater than this. In the first place, decorative items such as toys can be made. A more interesting development, however, is the manufacture of large ducting and pipes, including Y-fitting types. The ends are sealed during manufacture to make the blown container, but the ends of the pipes thus formed can easily be removed. This is where the importance of abs polymers may well lie since these ductings can be solvent welded to form valuable structures.

Looking ahead, far more unconventional items than this can be blown. For example, a kitchen sink unit can be produced by blowing two together to form a closed container. These are then split in half to give the two mouldings. Preliminary indications are that this method will be cheaper than both injection moulding and vacuum forming. Certainly the capital equipment of machines and moulds for injection moulding machines will be avoided, at least in part, and so far as vacuum forming is concerned, the blow moulding will enable raw polymer granules to be used instead of expensive calendered sheet. This theme is capable of considerable expansion and, for example, refrigerators could be made in the same way.



Finished jerricans after completion of the sequence of operations shown on page 903

Testing

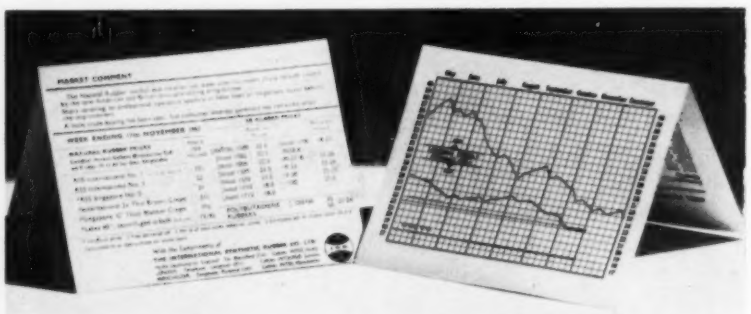
One of the big problems in manufacturing articles by blow moulding is to know whether or not they are satisfactory. Many of them have irregular shapes and it is very difficult indeed to formulate satisfactory tests. Obviously any functional tests must be highly empirical.

One technique adopted by Emerson Walker is to fill the container full of water and drop from increasing heights until failure occurs. A seven-gallon container, for example, contains 70lb. of water and it would be dropped from, say, 6ft. on to one edge. The height would then gradually be increased until the container leaked. Due to the number of variables it has been decided to forego testing in this manner and a more satisfactory test is now used. This is to apply hydraulic pressure to the containers until they burst. A seven-gallon rectangular container made of hd polythene burst at a pressure of 160psi. Bearing in mind the fact that the container was rectangular, this was an extremely good result. This test does not appear to be subject to random factors and it accurately indicates any weakness.

Conclusions

The long engineering experience of Emerson Walker and the established blow moulding techniques of Martin Rudolph is a happy combination for the production of first-class blow moulding machines. Apart from the normal high standard of engineering which would be expected as a matter of course, the Emerson-Rudolph machines have a number of outstanding features. These are automatic feed to the extruder; an extremely well designed scroll; a storage cylinder which enables large objects to be produced and a variable daylight which greatly increases the scope of a given size of machine.

All of these features mean that the user will have extremely reliable and versatile machines. These will be an important addition to British-made blow moulding units.



The International Synthetic Rubber Co. Ltd., of Hythe, Southampton, is mailing weekly to manufacturers a new price card. This fold-over, wallet-size card contains the price of the main grades of natural and the price of synthetics marketed by ISR. The back of the card gives formulations — typical examples used so far are the oil extension of Intol 1778 in translucent shoe soling and Intol polymers in conveyor belting to BS 490

Shell Process Oils are inexpensive

Shell have a very wide range of mineral hydrocarbon process oils available to suit most needs. In some cases they may replace, either wholly or in part, expensive fatty oils, at a fraction of the cost. If you use an oil as an ingredient in your product, or as a processing aid, or as an inert carrier for other chemicals, and if you are considering the cost of your product or your process, you should consult Shell.

Shell Process Oils are backed by Shell service and experience

Shell are specialists in mineral hydrocarbon oils, and the technical services of their chemists, with their experience of the use of oils in chemical processes, are available to you. Furthermore, the careful selection of crudes and the rigid processing controls ensure continuity of quality and supply of Shell Process Oils.

Find out about Shell Process Oils. They are inexpensive, offer great variety and are backed by Shell service and experience. Write to . . .

☐ **Shell Process Oils Section**
Shell-Mex House, Strand,
London, WC2

SHELL

SHELL PROCESS OILS

First Proof of Rubber's Structure

CARL HARRIES ELECTED TO AKRON'S HALL OF FAME

By G. STAFFORD WHITBY

C. D. Harries was elected as the eighth member of the International Rubber Science Hall of Fame at the University of Akron, Ohio, USA, on November 17. The citation reads: 'Carl Dietrich Harries (1866-1923), primarily for providing, by ozonolysis, the first and still the most direct and clear-cut proof of the basic chemical structure of the rubber hydrocarbon; secondarily, for contributing to the early development of synthetic rubber by work on the production of the necessary dienes, their polymerization, and the structure of the polymeric products'. Forty years ago Dr Whitby wrote an article on C. D. Harries for this journal called 'Recent Work of Harries on Caoutchouc' ('India Rubber Journal', Feb. 12 1921, 61, 313-315).

HARRIES graduated in 1890 from the University of Berlin, and then served as lecture assistant to A. W. von Hofmann. During this service he, in 1891-2, made an observation that much impressed him and that later was crucial in his scientific career — the observation that nitrous gases and also ozone attacked rubber tubes through which they were passed. He did not have the opportunity of following up this observation immediately, for shortly afterwards, on Hofmann's death in 1892, he was made a research assistant to Emil Fischer at Berlin, and for some years he conducted researches on a rather wide range of other subjects.

When he was free to turn his attention to work on the treatment of rubber with reagents that might possibly break the hydrocarbon down into products that would throw light on its chemical structure, he chose first to study the action on rubber of nitrous gases (generated by the action of dilute nitric acid on arsenic), his first paper on this study being published in 1901. The products of the action were called nitrosites This work, however, did little to elucidate the structure of rubber, and in 1903 Harries turned attention to the study of the action of ozone — a study which soon showed promise.

The ozone first used, made in a laboratory ozonizer, was too weak to be effective, but fortunately Harries had a connexion with the electrical firm of Siemens (his wife was a daughter of Werner von Siemens, who, in 1847, had been the first to apply gutta-percha as electrical insulation) and this firm designed and built for him an ozonizer adapted to give a stream of stronger (6%) ozone. By treating rubber in solution with this ozone, Harries was able to obtain from rubber, after removal of the solvent, a syrupy liquid or glassy solid — an ozonide $(C_5H_8O_3)_n$.

In order to provide a basis for the further study of this product, Harries turned for a time to an examination of the action of ozone on *simple* unsaturated molecules, publishing a series of papers on this in the early part of 1904. From this work, it appeared that in general the action of ozone on unsaturated compounds was to add to the double bond to form an ozonide, thus:

$$>C:C< + O_3 \longrightarrow >C\!-\!C<\ (O_3)$$

and, further, that the subsequent action of water on the ozonide was to bring about its scission and cause the appearance of carbonyl groups on the carbon atoms that originally formed part of the double bond, thus:

$$>C\!-\!C<\ (O_3) + H_2O \longrightarrow >CO + OC< + H_2O_2$$

where the carbon of the double bond was tertiary, the product was a ketone; where the carbon was secondary, the product was an aldehyde (which might in turn be in part oxidized to a carboxylic acid by the hydrogen peroxide arising from the hydrolysis). The procedure of thus rupturing a double bond by, first, addition of ozone, and second, hydrolysis of the ozonide, is referred to as ozonolysis. It gives from the original unsaturated compound oxygenated fragments capable of forming crystalline derivatives and thus readily identifiable.

In the latter part of 1904 Harries described the ozonolysis of rubber.[1] The products were found to be laevulinic aldehyde, $CH_3COCH_2CH_2CHO$ and laevulinic acid, $CH_3COCH_2CH_2COOH$. (The former of these two compounds had been discovered by Harries himself when, in work related to the chemistry of sugars, he had subjected alphamethylfuran to acid hydrolysis.[2]) This result made it clear that the fundamental structural unit in rubber was

$$:C(CH_3).CH_2.CH_2CH:$$

which represents the scissionable unit arising from the 1,4- combination of isoprene molecules, as in

$$-CH_2.CH{:}C(CH_3).CH_2.CH_2.CH{:}C(CH_3).CH_2-.$$

In a second paper on the ozonolysis of rubber,[3] Harries pointed out that the simplest chemical molecule compatible with the ozonolysis was 1,5-dimethylcyclo-octadiene-1,5:

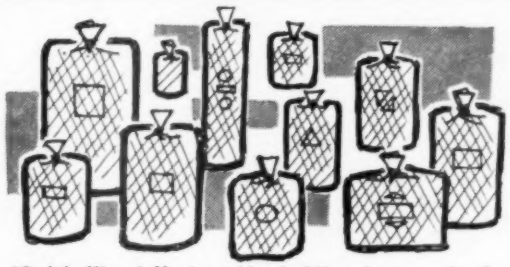
$$:CH_3.C.CH_2.CH_2.CH.$$
$$\quad\quad\quad

The job is easily done and quickly too with... 'Quick-Wrap'

HESSIAN TUBING

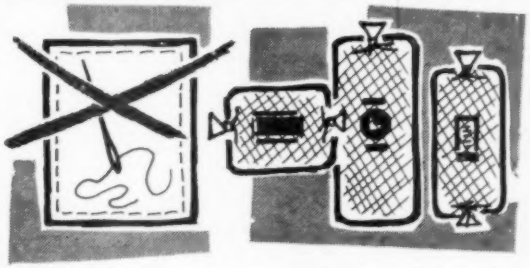
Ease and speed save your money and in these days of tough competition—you just can't afford to be without 'Quick-Wrap'

HERE ARE THE FACTS:—

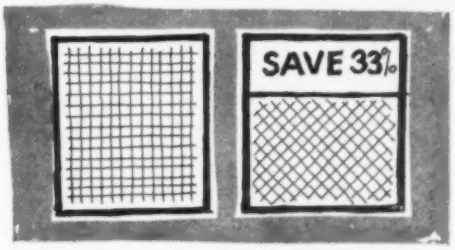


'Quick-Wrap' Hessian tubing is delivered to you already sewn into tubes of over 11 different diameters and in lengths of approximately 160 yards.

'Quick-Wrap' being sewn on the Bias makes a neater package because it moulds itself to your products.



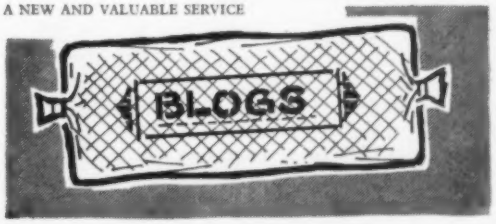
'Quick-Wrap' means you can wrap 3 to 5 parcels of goods in the time it takes to hand-sew one.



'Quick-Wrap' means less wastage, you use about 33⅓ less Hessian and the tubes can be used time and time again.

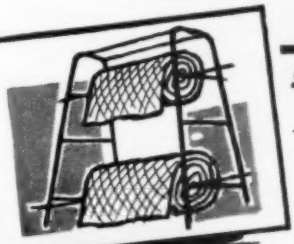
'Quick-Wrap' can be operated by unskilled labour in five easy, quick steps.

A NEW AND VALUABLE SERVICE



'Quick-Wrap' can be supplied with your Company's name or product or an advertising slogan.

'Quick-Wrap' can be mounted on the dispenser illustrated (supplied by Quick-Wrap Tubing Co. Ltd. at a nominal cost) for easy application.



✱ Get to know more about 'Quick-Wrap', write or phone for the illustrated leaflet which tells you how to pack better all round.

'Quick-Wrap'

HESSIAN TUBING—

Packs better all round

QUICK-WRAP TUBING CO., LIMITED
Jute Mills, Bow Common Lane, London, E.3.
Telephone: EAST 3033
Suppliers to the Admiralty and Ministry of Supply

aggregation of smaller molecules by secondary forces — forces assumed by Harries in the case of rubber to be associated with the unsaturated centres.

Harries realized that in this connexion it would be crucially important to hydrogenate rubber (thus causing the unsaturated centres to disappear) and to examine the product.[5] Just before his death he succeeded in bringing about such hydrogenation.[6] It remained, however, for Staudinger (1924) to pursue this point; to show that rubber on hydrogenation gave a high-molecular, colloidal, elastic material, and to draw the conclusion that rubber had a macromolecule in which the basic chemical units were combined by primary valencies.

By his application to rubber of the ozonolysis procedure discovered by him for the elucidation of the structure of unsaturated compounds, Harries at one stroke made clear the basic chemical structure of the rubber molecule and provided a firm foundation for the later development of knowledge of the chemistry of rubber. How dramatic was the advance that he made can be suggested by noting the fact that just prior to his work, although it was realized that rubber had some relationship to isoprene and the terpenes, so little was clear as to its structure that C. O. Weber in his classical book of 1902, 'The Chemistry of India Rubber', stated (pp. 23, 31) that there was 'little doubt that india rubber, for $C_{10}H_{16}$ contains three [!] pairs of doubly-linked carbon atoms'.

In addition to his work on the elucidation by ozonolysis of the basic chemistry of rubber, Harries contributed a good deal otherwise to the progress of rubber chemistry in its early days. In 1905 he showed that gutta-percha gave the same ozonolysis products as rubber, and suggested that it was a stereoisomer of rubber.[7] During the first decade of the present century he did pioneering work on (1) the synthesis of isoprene and other dienes, (2) the polymerization of isoprene, and (3) the study by means of ozonolysis, of the structure of synthetic rubbers made from a variety of dienes by a variety of polymerization methods.

Worthy of note in this connexion are the facts (1) that he developed the so-called isoprene lamp[8] in which isoprene is produced by passing the vapours of terpenes over an electrically-heated spiral — a method actually used in the United States during the last war for the commercial manufacture of isoprene from dipentene, (2) that he discovered, independently of and almost simultaneously with Matthews and Strange in England, the use of sodium for the polymerization of isoprene. (This discovery, later used in Germany and Russia for the manufacture of polybutadiene, involves, it must be confessed, no great degree of originality, in view of the common practice, for drying purposes, of leaving liquids in contact with sodium. Harries, himself, in fact, mentions earlier the use of sodium to dry the fractions obtained by the pyrolysis of rubber[9]), and (3) that he showed, by ozonolysis, that the rubber obtained by the sodium polymerization of dienes are not of regular, 1,4-structure, but contain 1,2- and 3-4- units.

The ozonolysis of unsaturated compounds discovered by Harries has proved over the years to be a reliable and vastly important method of determining the structure of a wide range of organic compounds, not only in rubber and the terpene series, but also in unsaturated fatty acids, vitamins, etc., etc. Recent important applications of it have been in the study of the biogenesis of rubber.

The outstanding importance of Harries' ozonolysis reaction was recognized by his appointment in 1904 as Professor of Chemistry at the University of Kiel and his election in 1920 to the presidency of the German Chemical Society. In 1923, he, alas, died from cancer, at the age of 57.[10]

REFERENCES

[1]Berichte, 1904, **37,** 2708.
[2]*Ibid.*, 1898, **31,** 37.
[3]*Ibid.*, 1905, **38,** 1195.
[4]G. S. Whitby, *IRJ*, 1921, **61,** 313.
[5]C. D. Harries, 'Untersuchungen ueber die natürlichen und künstlichen Kautschukarten,' Berlin, 1918, p. 48.
[6]*Berichte*, 1923, **56,** 1051.
[7]*Ibid.*, 1905, **38,** 3955.
[8]*Annalen*, 1911, **383,** 228.
[9]*Berichte*, 1902, **35,** 3256.
[10]Obituaries of Harries: (*a*) W. Nagel *et al.*, *Zeit angew. Chem.*, 1924, **37,** 105-117; (*b*) R. Willstätter, *Berichte*, 1926, **59,** 123-157.

Increase in Webbing Production

PRODUCTION of Pirelli resilient webbing has reached a figure of 1.5m. ft. a week, it was stated in London last week. Production started at 20,000ft. a week in 1953 and at present Pirelli has produced over 35,000 miles of webbing at its Burton-on-Trent factory.

Sir Victor Raikes, director of Progress Mercantile Ltd., the sole distributors of Pirelli Ltd. in Great Britain, said that continuous research by Pirelli technicians had produced a range of resilient webbings to suit every requirement by the industry. 'We have developed various methods of application and fixing devices which enable the industry to adopt modern production techniques and thus save labour and materials. We have provided the designers with a means of creating upholstered furniture which is easy to produce, which is extremely comfortable and well suited for modern homes'.

This Orbit Chair, designed by Peter Hoyte, is of all-steel construction with foam on Pirelli webbing. All exposed parts are coated in fused pewter nylon

BOAC Boeing jet airliners use Pirelli Resilient Webbing for seats and a high percentage of all cars produced in Britain use this fabric in the construction of their seats. Every Morris Minor produced since 1954 has had front seats using Pirelli Resilient Webbing; so has almost every Bentley Continental and most of the Austin models since 1954. The new Mini-Minor and Austin Seven have this material in their seats.

Other Major Products

Tyres and footwear are also major products manufactured by Pirelli at Burton — Pirelli claims to be the biggest manufacturer of slippers in the UK.

The firm began making rubber-soled footwear at Burton in 1934. Since then it has made and sold over 60m. pairs of all types.

The first Pirelli tyre to be manufactured at Burton came off the assembly line in 1929. Nearly 6,000 public service transport vehicles up and down the country run on Pirelli giant tyres. Eight Pirelli factories spread across the world manufacture tyres to the same advanced specifications and high standards as are used in the Burton factory.

see you through your problems...

Storeys range of vinyl materials offers a solution to almost any design or manufacturing problem —even to applying a durable, attractive covering to any shape (product or component) as odd as a stiletto heel—speedily and economically. In the fashion field, Storeys spectacular new material, Neolan, offers exciting possibilities for garments and fashion accessories. For outdoor use, Plastolene, the tough reinforced vinyl film, made up into garden furniture, shop blinds, awnings and swimming pools is making exteriors more glamorous. And for domestic use, Storeys gay, labour-saving Con-Tact self-adhesive plastics, together with many decorative vinyl curtaining and upholstery materials, are making every home more delightful to live in.

pioneers of modern plastics

Storeys OF LANCASTER

White Cross, Lancaster
Telephone: Lancaster 3232
Telex No: 6587

VIEWS and REVIEWS

Psychology and Polymers

MOST of my notes this week will be based on the latest issue of the *Transactions and Journal of the Plastics Institute*, Vol. 29, No. 83, October 1961, which is mainly concerned with education in the world-wide plastics industry.

More than ever, in this issue, this journal contrives strikingly and successfully to serve the double purpose of being the organ of the PI as well as to publish outstanding technical papers of interest to the wider community of polymer technologists and producers.

Fortunate in having the time, I sat down and read it, not as an enforced task, as is some of my reading, but because I became genuinely interested in a subject which often leaves me cold.

Missing Link Found

Do you look at a journal as I do? From back to front. This explains why I read first the last item in the journal, 'The missing link 'twixt horn and plastic', by H. F. Wilson, an address given last June by the then President to the Worshipful Company of Horners.

It would be in tune with the style of Mr Wilson's address to say that he lovingly described the behaviour, properties, processing, and products made in the 19th and early 20th centuries from gutta-percha. He enthused over the moulds then in use, some of them beautiful examples of craftsmanship which are still in existence, and he contrasted the gutta-percha moulding cycle of hours with the modern thermoplastic, injection cycle of seconds.

He spoke on the use of gutta as the insulant for submarine telegraph cables, and how a lucky chance facilitated its rapid replacement, just when needed, by the new wonder material, polythene. 'The fact is that the history of polythene became the history of gutta-percha in reverse because, unlike gutta-percha, it started with a bias towards electrical uses, and not until after the war did its non-electrical applications, particularly for consumer goods, take precedence'.

Gutta-percha, Mr Wilson says, has come and almost gone in 120 years (even its present 'tiny hold on our affections . . . an essential ingredient in all golf ball covers' may soon disappear) and so it deserves the appellation of the 'missing link between the horn of bygone years and our modern plastics of today'.

I passed over some pictures and paused to look at the list of films available on plastics subjects, the useful calendar of conferences, exhibitions, etc., and then the papers to be presented at two forthcoming conferences.

Then I read the editorial about next year's Centenary of Plastics, which brought me to the Rubicon between the Journal and the Transactions, over which and the next 40 pages I thumbed undaunted, and so reached the first of the six papers which constituted the Institute's Conference on Education and Training in the Plastics Industry.

Outcome No Exception

The overt outcome of any conference is rarely epoch-making and this was no exception, but if no palpable goals were scored there was some pretty play in mid-field.

One could have prophesied (I use the words of D. S. Mahon, the chairman of the conference committee) that the conference would be found to have 'been extremely valuable and that it should lead to increased understanding and co-operation in the future'. Almost all conferences come to that conclusion, and many of them, as this one did, to a wish for another one in a few years.

Every technician, technologist, scientist, manager, and director in the industry should put this Transaction in his document case so that he can read at least Dr Tolley's contribution while the family watch television during the evening, because Dr Tolley is trying to discern the size and outline of one of the industry's major problems. In other words, he is trying to work out how many technical people we need now and in ten or 15 years, what kind they ought to be, and how we are to acquire them.

Tolley begins with the important point that the conference was concerned with the *technical* needs, in education and training, of the plastics industry; there are other needs of equal importance which must also be catered for but they were not the subject then being discussed.

(I may remark that the IRI covered some of those needs in its Southport Conference in 1959 on 'Technical Organization' and will cover more next year in its Leamington Conference on Management Decisions.)

Think of a Number

I do not mean this as a criticism of Dr Tolley's efforts, still less do I want to do him a disservice, but it is clear that he had so difficult a maze to thread, so many unknowns to contend with and such a paucity of data to go on, that he appeared at times to 'think of a number, double it, add the date and his age. . . .'

I mean that his conclusions, as he himself insisted, have a wide coefficient of variability.

Roughly, his method consisted in making a calculation of the output of the industry in 1975, converting this into total manpower, and then applying to this figure a ratio of technical to other workers.

Starting from the 1960 figures of output, he calculates the 1975 figure largely by using an anticipated growth rate of 8.7% compound, which process, he says, is unlikely to give an over-estimate. I will not go into the detail as to his manpower sums, nor shoot at his assumptions and guesses, for he knows they are a sitting target and I have more respect for the courage, knowledge, and acumen of a man who will thus offer himself to be shot at. If anyone can do better, let him try.

By figuring from such bases, Dr Tolley presents what must prove to be a most valuable document, curves of requirements in technical personnel for the UK plastics industry between 1961 and 1975.

'If these figures are at all realistic', he says — and he

COMMENT ON SCIENTIFIC AND INDUSTRIAL MATTERS

by **F. C. JENNINGS**

has been insisting throughout that they are deliberately pitched low — 'it is apparent that a very real problem exists in deciding upon steps which must be taken within the next 3-5 years in order to satisfy future needs of the industry'. Existing centres of instruction and education must be utilized to the full and expanded.

Educate or Train?

Even if we get enough students coming forward and we have the facilities in buildings, equipment, and staff to deal with them, what shall we teach them? Section 4 of Dr Tolley's paper discusses this with insight and wisdom.

It depends mainly on how one sees the technologist and his work, and what one demands of him. 'Our technologists need vision, they need an understanding of the many forces controlling and directing an industry; they must be adaptable and practical, they must have a firm basis of technical and professional competence'. '. . . whilst the industry certainly needs the scientists and engineers, what is also needed is the person who has been educated in such a way that the study of plastics — their manufacture, their properties, their conversion — becomes the core of a wider liberalizing study . . . one demanding an intellectual discipline. . . .'

'There is no real conflict between a basic demand for liberality in education and efforts to prepare a man for a particular industry. What is important is that education should not become training'.

How To Do It

'We cannot continue to hope to achieve in three years what other countries take four, five or even six years in doing. Our intellectual superiority cannot be as clearly established as all that', he adds with fine British irony. So the teacher wants the time.

Then there must be enthusiasm, 'grounded in an appreciation of practical issues'. The early stages must be orientated towards the properties, processing, and conversion of plastics materials, with which must go 'a more ready recognition of the limitations and advantages of plastics'. 'The real task would seem to lie in the establishment of fully integrated courses'.

I am not trying to summarize Dr Tolley's lecture. I have quoted at some length in order to give something of the flavour and quality of his thought. As becomes the Principal of the College of Further Education at Worcester, he has much more to say about practical measures and is entitled to be read in the original with care and attention.

There is a sense in which Dr Tolley's paper may be regarded as the theoretical contribution to the conference while the others dealt with practical aspects at home and abroad. A. A. Part, of the Ministry of Education, explained the British system of education, the main features of technological instruction, and gave special attention to sandwich courses.

Professor Bryce Maxwell spoke on 'Postgraduate education in plastics in the United States'; F. W. R. Wijbrans and R. Tunteler described an interesting Dutch experiment in meeting a shortage of specialists by sponsored research training at the Plastics Research Institute TNO at Delft; Dr A. H. Henning described what is being done in West Germany to meet the situation.

Point of Emphasis

All these papers raised points of interest, some of which were brought out in the discussions that are printed here with them. I could wish for an integrative summing-up of papers and discussions which might well have been done by M. Kaufman at the same time as he was making his useful contribution on the Examinations of the Plastics Institute, in which he contrived to introduce some shrewd general observations (especially about writing English and specialization) into an otherwise straightforward description.

If I were asked to emphasize one point arising from the conference it would be to plead with, cajole, persuade, bully, frighten all those influential people in our industry who take no interest in this question of the relationship between our thinking on education today and the well-being of our industry tomorrow.

I, myself, am not intrinsically interested in education, so I well understand the feelings of those who prefer to think about costs, supplies, interest rates, trade unions, mould cycles, cross-links or free radicals. We must recognize, however, that there will be few of these things left to think about, in the plastics context, unless we have the right type of young people, especially technologists in the broadest sense of the term, coming along to fill our shoes.

Distilled Experience

A couple of months ago I devoted a lot of space to the new *ASTM Standards for Plastics* because it represented the 'distilled experience, comprehensive technical skill and committee-shaped wisdom of the US plastics industry!'

Since I wrote those words the society has changed its name, adding the word *and* to make the title American Society for Testing and Materials, thus adding emphasis to the society's research work in seeking knowledge of the nature of materials.

The latest publication issued by the society is the 1960 *ASTM Proceedings*, Volume 60. This 1,242 page volume is the official record of the proceedings of the society for the entire year. It contains, among other information on lectures, symposia and meetings, 77 reports of technical committees and 44 technical papers on subjects pertaining to research and standards for materials, which provide a valuable reference source for scientists the world over. Another important section is a report on the activities of the new Division of Materials Sciences which was organized to co-ordinate studies and discussions on the fundamentals of materials.

CHARLES JENNINGS

MEN and MATTERS

A Review of People and Events

by Peter Richards

SHOPPING at my local hardware store last weekend for a dustbin I was pleased to see a label on a polythene bin indicating that the material had limitations. It said — quite simply — 'not suitable for hot ashes' — and was presumably put there as a small insurance by the manufacturer against possible complaints from uninformed householders that 'plastic's no good'. This is a step in the right direction and one which should be taken much more firmly much more often. It was a very small label and not too firmly fixed. Why not, I thought, actually mould the warning into the lid, which *could* be done at no great increase in cost.

Then I looked at the price tag — and found one reason why the additional expense had been spared. The polythene bin was almost double the price of a very good quality galvanized one of equivalent capacity — which I bought. In this particular application the advantages of the plastics are not great enough to warrant this enormous price difference, which would seem to indicate that the manufacturer was trying to recover his mould and development costs rather quickly, thereby — as far as I was concerned — pricing himself out of the market.

There is still a prejudice against plastics in some domestic applications and obviously adding a price barrier is not helping to remove it. A little more patience in waiting for the profits on the part of some manufacturers of consumer goods would surely pay dividends in the long run.

Modern Type Papier Mâché

The manufacture of ornaments and other articles from papier mâché is by no means as common nowadays as it used to be but news of an interesting development of the technique has recently come to my notice.

John Hookham of Cambridge, has built a 17ft. 6in. sailing boat entirely from paper — impregnated with Aerolite glue. Although in his case necessity was mother to invention, and he started work immediately after the war when none of the normal materials were available, the technique might well appeal to other enthusiastic do-it-yourselfers.

The main framework of the boat consists of tubes made by winding Aerolite - impregnated newspaper round $\frac{1}{16}$in. diameter mandrels. The centre-case, keel, gunwale and supporting ribs, floorboards and bearers, are all made from newspaper, as is the skin of the boat. The 27ft. mast was built in the same way, using kraft paper, and altogether between 13,000 and 14,000ft. of tubing were used.

The boat handles well and has given many hours of very satisfactory sailing. It will be on show on the Ciba (ARL) Ltd. stand at the boat show at Earls Court in January 1962.

Doing a Barbara Moore

I thought the era of long walks was over, but apparently people are still doing Barbara Moore's. A sapper in the Royal Engineers recently beat the record for the 100-mile walk. He walked from his army camp at Longmoor, near Petersfield, to Waterloo Station and back as far as Liphook, covering the distance in 28hr. 15min. This beat the previous record set up by a New Zealand soldier by 3hr. 35min.

The solider — Brian Marshall — strode out on ITS Rubber's Commando soles and heels. Shortly he plans to walk from Edinburgh to London.

Allied's General Manager

H. D. Atkin, who was responsible, as works manager, for the plant installation and other preliminary work at Dunstable, for Allied Structural Plastics Ltd., has recently been appointed general manager. Mr Atkin, who was born in Queensland in 1923, served with the Fleet Air Arm from 1941 to 1946. Since demobilization he has had wide experience in the plastics industry, both in this country and in Australia, and before joining Allied Structural Plastics he was in the technical sales department of British Geon Ltd. for four years.

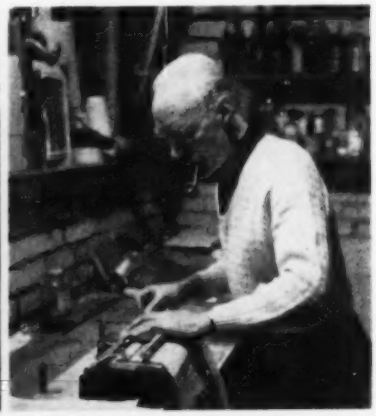
He is a member of the building sub-committee set up a few months ago by the Plastics Institute to consider suitable applications and standards for plastics products to be used in the building industry.

Rubber to Metal Bonding?

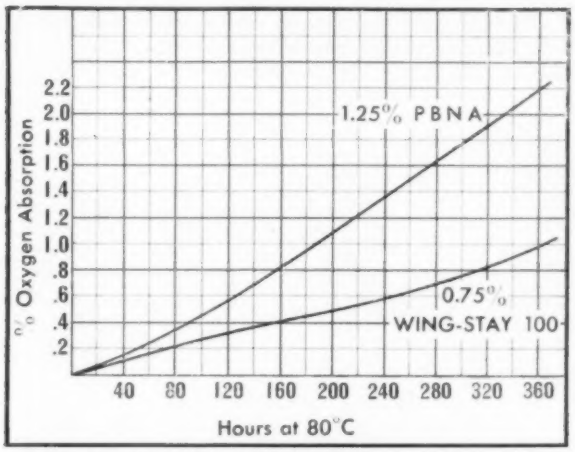
Judging from a recent report from Malaya, it looks as though the board of the Malaysia Rubber Co. may soon be faced with a difficult decision.

Surface examinations indicate that a limited field of iron ore may exist on the company's property and further investigations are being carried out. The board has promised that shareholders will be notified if an economically workable deposit is found, and it is not difficult to imagine a situation arising where a vote has to be taken on whether to produce iron or rubber.

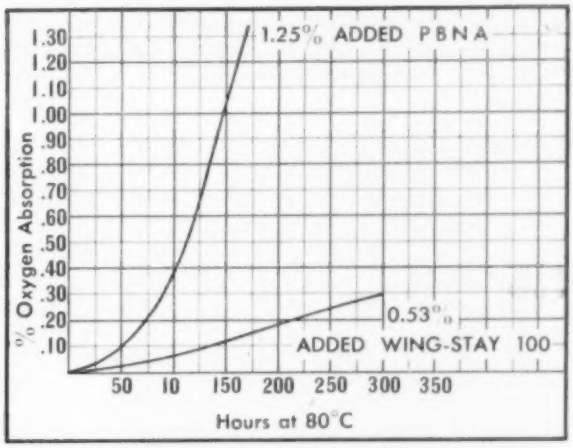
This tempts me facetiously to



The first and last stages—John Hookham rolling tubes from newspaper impregnated with Aerolite glue and the paper boat *No Hurry* under full sail on the River Cam *(see Modern Type Papier Mâché)*

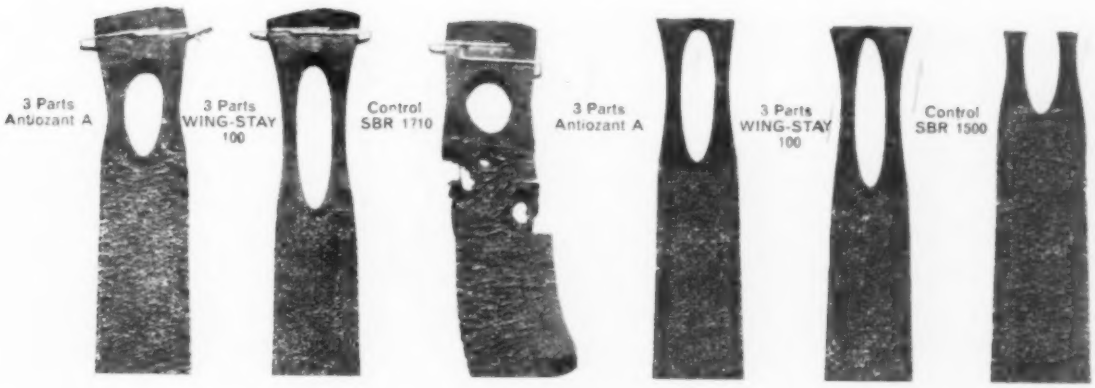


Effect of WING-STAY 100 on the stability of an Oil-Extended SBR Polymer.



Effect of WING-STAY 100 as added stabilizer in a "cold" nonextended SBR Polymer.

DYNAMIC ROOF AGING



This is it:

The first truly effective combination of stabilizer, antioxidant and antiozonant for synthetic rubbers

It's WING-STAY 100—an essentially non-toxic, non-volatile, mixed diaryl-p-phenylenediamine that uniquely combines the more desirable properties of a number of commercially available age resistors. As a stabilizer for discolouring-type styrene/butadiene rubber, Wing-Stay 100 gives excellent raw polymer protection and serves as a better building block for compounders at no extra cost. As an additive to synthetic rubbers, Wing-Stay 100 provides these benefits: Easy incorporation. No acceleration of cure. No blowing at normal levels. Superior resistance to oxidative degradation and flex cracking. Outstanding antiozonant activity. Much better over-all protection at lower cost.

The charts and photographs above indicate the effectiveness of WING-STAY 100. But why not prove it to yourself with your own tests? Samples of WING-STAY 100 or PLIOFLEX rubbers containing it, plus full technical information, are yours by writing to: Goodyear (Chemical Division), Bushbury, Wolverhampton.

Distributed in the United Kingdom by:

HUBRON SALES LTD., FAILSWORTH, MANCHESTER TEL: FAILSWORTH 2691

Other Distributors in all Western European Countries

GOODYEAR

CHEMICAL DIVISION

Pliolex, Wing-Stay—T.M.'s The Goodyear Tyre & Rubber Company, Akron, Ohio, U.S.A.

Goodyear International Corporation, Chemical Div., Akron 16, Ohio, U.S.A. The Goodyear Tyre & Rubber Co. (G.B.) Ltd., Chemical Div., 8-9 Salop St., Wolverhampton

suggest that the company should think seriously of going into business on rubber-to-metal bonded components!

Geigy (Holdings)

Geigy (Holdings) Ltd., of Manchester, has announced that the following have been elected directors as from January 1 1962. They retain their present appointments as described:

Dr F. Buchmeier, deputy chairman and managing director, Ashburton Chemical Works Ltd.; deputy chairman, James Anderson and Co. (Colours) Ltd.

H. Jones, deputy chairman and joint managing director, The Geigy Co. Ltd.; director, Ashburton Chemical Works Ltd.

Dr H. B. Knuchel, chief executive and secretary, Geigy (Holdings) Ltd.; director, The Geigy Co. Ltd.; director, Geigy Pharmaceutical Co. Ltd.

Changes at Sutcliffe

Changes in the board of directors have recently been made by the Sutcliffe Moulded Rubber Co. Ltd., Church Street, Ossett. E. D. Sutcliffe has resigned from the board and W. F. G. Sutcliffe has been appointed chairman. The director and general manager, A. Glover, has been appointed managing director.

Mr Glover, whose photograph appears on this page, was born in Staffordshire and gained his early experience with the Goodyear Tyre and

Rubber Co. Ltd. He joined the Sutcliffe Moulded Rubber Co. Ltd. in April 1947 as works manager and was appointed director and general manager in 1949. Mr Glover, who is a member of the Council of the Rubber and Plastic Research Association of Great Britain, is also managing director of Recticel Ltd., Summerville Road, Bradford.

FBRAM President's Dinner

From l'apéritif to les liqueurs — and beyond — the FBRAM president's dinner at the Café Royal, London, last week went off with the verve which we have come to expect of this occasion since its inception in 1958.

The president, C. H. M. Baker, welcomed more than 200 guests from the rubber industry and allied and associated industries. He gave a particular welcome to Ross Ormsby, president of the Rubber Manufacturers' Association of New York, who had flown over specially for the dinner. Both Mr Baker and Mr Ormsby referred to the close co-operation between the RMA and the FBRAM, in such fields as the grading and packing of raw rubber, which is yielding benefits for rubber manufacturers in both countries.

At times during the evening one might have been excused for calling it the Presidents' Dinner — for with Mr Baker were past presidents H. G. W. Chichester-Miles and Jasper Frankenburg.

Other prominent guests included Sir Edward Beharrell, Sir Walter Worboys, J. F. A. Baker (Ministry of Transport), G. J. MacMahon (Board of Trade) and Colonel D. G. Dickson (RTA).

Polly Ester has gone to market—see page 922

THE LEGAL ANGLE

The Agent's Commission

By a Barrister

AN East European country wished to buy certain rubber products in the UK. A firm of import-export agents came to learn of it and were instructed to make enquiries as to the best terms available. This they did, and eventually they advised the purchasing country to obtain the goods from X Ltd. Meanwhile, of course, they had met with the appropriate director of X Ltd. and a commission of 5% was agreed, as regards any business effected as a result of this introduction.

In due course, X Ltd. sold to the foreign country a large quantity of goods — but of a different nature to those originally enquired about, and they did not inform the agents of the sale.

When the agents came to hear of it, they wrote to X Ltd., demanding their commission — which was refused.

'We had been in communication with the country concerned for some time before you approached us', read the letter. 'We did not sell the line of goods concerning which you enquired. It was not as a result of any introduction from you that we obtained these orders. Therefore you are not entitled to any commission'.

In cases like this, is commission payable?

The basic rule is that where an agent is to be paid commission on business introduced by him, commission becomes payable if business is, in fact, introduced by him. Although this sounds so elementary, it is neither elementary nor simple.

First, some people have the odd idea that because an agency agreement is not made in writing, 'there is no contract'. This is nonsense. Sensible parties to such agreements either make or confirm them in writing, so as to make them easy of proof. But they do not have to do so.

Second, it is often extremely difficult to know whether the agent was the effective cause of the introduction of the business concerned. Where, for instance, you have had certain customers on your books and an agent re-introduces them, what then? The answer is that if the agent was the real cause of your obtaining the orders concerned, he is entitled to his money. But if you would have done the business in any event, there is no need to pay him.

Take another example. Suppose that you are selling your factory. You employ agents and one of them introduces you to a potential purchaser with whom you had already been negotiating and with whom, in fact, the customary haggles were already under way. If you sell to this person, the agent is not entitled to commission. He may have brought particulars of the proposition to the purchaser's door, but this was both unnecessary and irrelevant to the sale, therefore he receives nothing.

In the case mentioned at the start of this column, it really was a matter of grave doubt as to whether the business done had been introduced by the agent concerned, so the parties very sensibly compromised their claim. As each considered that he was in the right, each regretted that more precise terms had not been agreed and committed to writing.

FBRAM President's Dinner

Some of those present at the FBRAM President's Dinner at the Cafe Royal, London, last week *(left to right)*: **1. C. H. M. Baker, President FBRAM (Firestone) and K. Massey (Dunlop). 2. J. H. Lord (Dunlop) and S. C. Covell (director FBRAM). 3. M. McL. Symington (RTA). 4. Maldwyn Jones (I.C.I.) and A. Tonge (J. Mandleberg). 5. E. A. Murphy (Dunlop) and Dr L. Bateman (NRPRA). 6. S. G. Deaves (BTR) and F. Train (John Bright). 7. J. Frankenburg (Greengate and Irwell), J. Tusa (British Bata) and E. R. Rumsey (British Bata). 8. D. E. Cameron (BB Chemical) and F. D. Wayre (Dexine Rubber). 9. Dr W. McG. Morgan (Monsanto Chemicals) and L. R. Mernagh (Firestone). 10. J. Bishop (Nordac) and F. D. Wayre (Dexine Rubber). 11. J. T. Hull (Dexine Rubber), D. O. MacDougall (Shell Chemical) and P. G. Croft-White (Shell Chemical). 12. R. P. Anderson (BPF) and C. J. G. Stanley (BPF). 13. R. J. Farrier (William Warne) and C. W. Snelling (Poppe Tyre and Rubber). 14. H. Simon** *(left)* **(Evode). 15. F. Heywood (Alfred Smith Ltd.), H. Rigby Grant (Alfred Smith Ltd.) and J. F. E. Ruffell (Durham Raw Materials).** *(See Men and Matters, opposite page)*

PLASTICS MACHINERY DEVELOPMENTS

The P4½in. — New Shaw Extruder

STURDY MACHINE FOR SHEETING AND BLOWN FILM

By JOHN SHEARING

FRANCIS Shaw and Co. Ltd. has introduced a new extruder to its range of plastics processing equipment — the Type P4½in., specially designed for the extrusion of high impact polystyrene or polythene sheet and blown polythene film.

Its size can be judged from the sheets which can be produced. These range in thickness from 0.020in. to 0.3125in. This is a remarkable range and a thickness of 0.020in. is very low for a large machine of this kind. The maximum untrimmed width of layflat tube is 63in.

Outstanding Extruder Features

The screw is machined from a solid high quality nitrided alloy steel forging. It is bored out for internal cooling and has a less usual provision on even the most modern extruders of a water gland if necessary.

The screw has the usual Shaw high-efficiency design and is highly polished. It has a length/diameter ratio of 20:1 when sheeting is being extruded and a length/diameter ratio of 18:1 when blown film is being extruded. As with all other aspects of this extruder, maintenance is very easy and the screw is detachable from the driving head by the screw jack.

The cylinder is machined from a nitralloy forging. It has a capacious metal hopper with a window viewer incorporated. Another important feature, again so often omitted even from the most modern machines, is a means of supplying virgin or reground material to the hopper pneumatically from a proportioning loader.

Two die heads can be supplied, one for sheeting and the other for producing blow film. It has an adjustable orifice to enable the various thicknesses to be produced.

Heating and Cooling Arrangements

One of the signs for judging a good extruder is the heating facilities provided. Perhaps even more important are the cooling facilities so often lacking on large machines.

In the case of the Shaw Type P4½in. extruder, the barrel is heated electrically in five separate zones controlled by electronic proportioning controllers mounted away from the machine on vibration-free mountings. Total power consumption is approximately 35kW.

The sheeting head is equally well treated. It also has five separate heating zones with a total consumption of approximately 17kW. Such heat is not required for the blown film head which has two zones, each with 6.5kW. approximately, depending upon the size of annulus to be extruded.

As far as cooling is concerned, it has already been mentioned that the screw is bored out internally and has provision for a water gland. Axial blowers are provided for cooling the barrel. These have automatic and hand control. On the latter, the blowers run continuously, but on automatic they cut out as the heaters are switched on, maintaining a very steady temperature.

The feed-box steel casting is separately water cooled.

Mechanical Features

An important feature of this extruder is the powerful motor. Large extruders are so often underpowered and cause annoying cut-outs, that the insistance of a suitable motor sometimes assumes major importance.

The drive in the case of the P4½in. extruder is by variable speed horizontal AC motor, developing 75hp at 1000rpm. It is infinitely variable down to 18.75hp at 250rpm.

Other important features of the motor are that it is continuously rated through the speed range, it is designed for 125% full load torque at starting (a very valuable feature). It is screen protected, foot mounted and non-reversing.

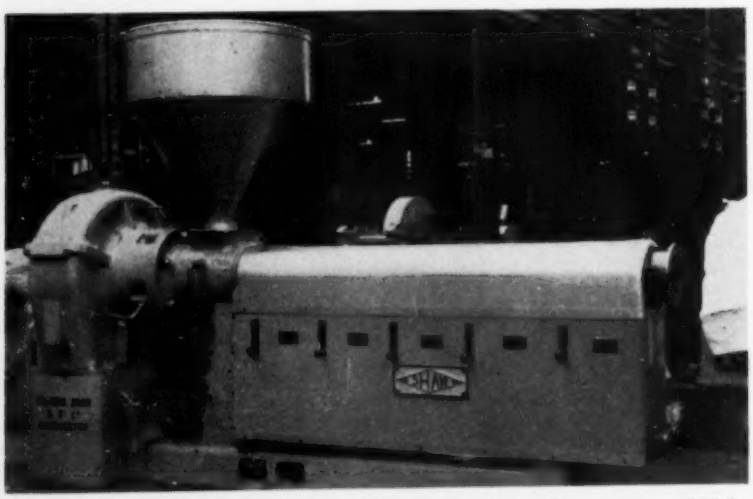
The gearbox has single reduction double helical teeth with wheel and pinion, mounted in roller bearings. An oil pump is mounted axially with the input pinion, and supplies both gearbox and thrust bearing.

Control Features

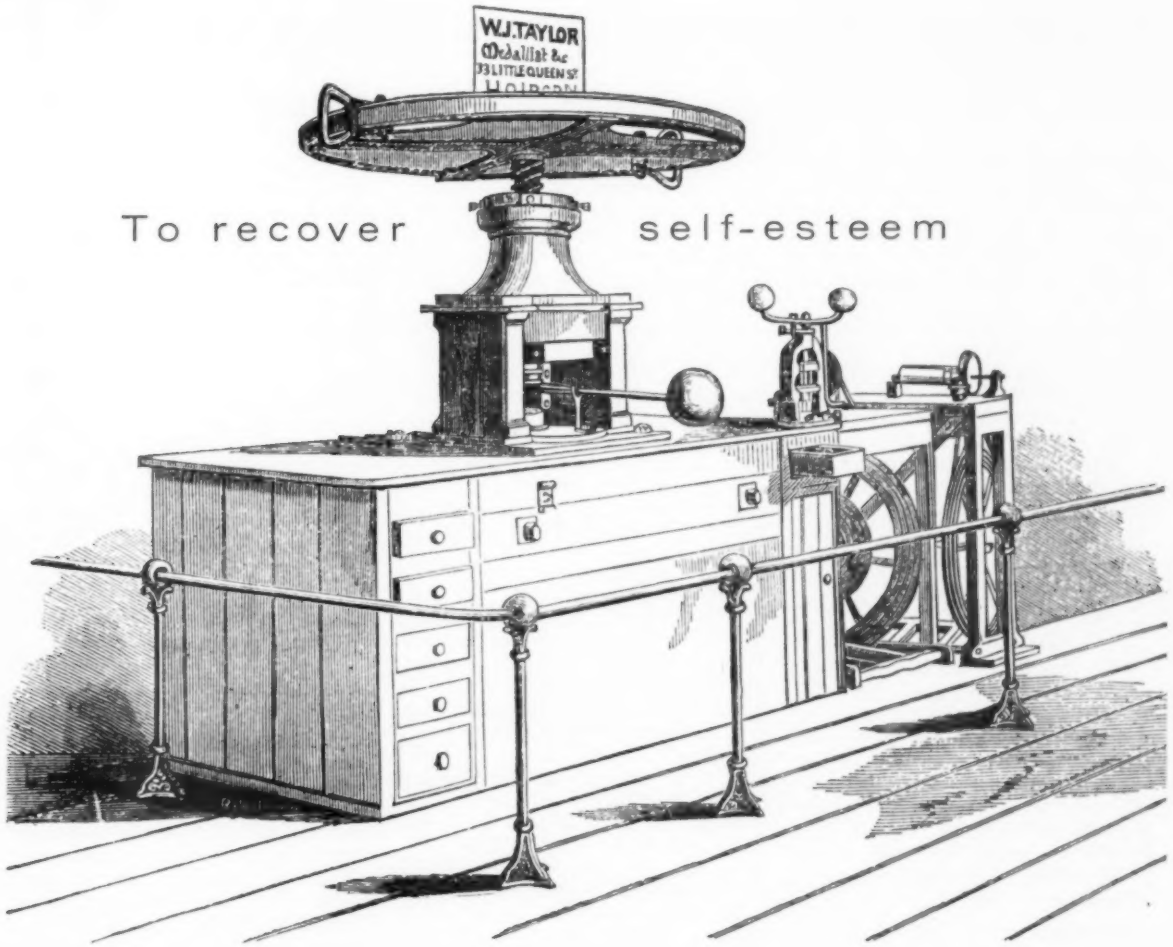
An induction regulator is employed to give motor speed variations. It is totally enclosed, oil-cooled and operated by a pilot motor. It is designed with top and bottom limit switches and bottom speed interlock.

The control panel is a push-button operated, airbreak contactor, direct switching type. It includes a triple pole interlocked isolating switch, triple pole main contractor, fan motor, overcurrent releases with time lags, triple pole, motor interlocked, reversing contactors, and pilot motor fuses for overload protection. The whole is contained in a ventilated sheet metal case with front hinged door and rear access.

Once the controls have been switched on and the heating arranged, a remote control system is provided. This allows for 'start', 'stop', 'accelerate' and 'retard' operations by pushbuttons.



The new Shaw P4½in. extruder is specially designed for the extrusion of high impact polystyrene or polythene sheet, and blown polythene film



TAYLOR'S MEDAL MACHINE

Do you prefer decorations to dividends? Or would honours seem too abstract? If your firm uses solvents, and is not recovering them, the very mention of Active Carbon Solvent Recovery by Sutcliffe Speakman in the right quarter is likely to bring both cash and kudos. Sutcliffe Speakman will either tell you how to recover solvent at a profit, or will tell you it cannot be done. Just to contact them probably rates a medal: for shining common sense.

SUTCLIFFE SPEAKMAN

SUTCLIFFE, SPEAKMAN & CO LTD · Leigh · Lancs · Tel: Leigh 72101 (6 lines) London Office: 2 Caxton St · Westminster · SW1 · Tel: Abbey 3085

Factice in SBR

VALUE IN DESIGNING TYRE COMPOUNDS

FACTICE could be of great assistance in designing SBR tyre compounds.

This was stated by Dr C. Falconer Flint in a recent lecture at Newton Heath Technical College, Manchester.*

Dr Flint, Director of Research of the Factice Research and Development Association, supported his lecture on two pillars: (a) small amounts of factice are qualitatively different in effect from large amounts, and (b) factice is a chemically active compounding ingredient which takes part in the curing system of SBR. During the course of the lecture, he drew attention to three signposts to success with factice in SBR compounds: the use of (1) the right amount of factice, (2) the right kind of factice, (3) the right acceleration.

The lecturer elucidated his point about the qualitatively different effect of small amounts of factice by the example of a tread type SBR compound in which 1phr of a factice increased the tensile modulus, but 10phr decreased the modulus. There appeared to be a nul point between 2.5phr of factice and 5phr — at which modulus appeared to be unaffected by the factice.

False Economy

Similarly, the effect of factice on other vulcanizate properties and on processing properties, could be favourable or unfavourable, depending on the amount of factice used. The nul point, which divided 'small amounts' from 'large amounts' was usually below 5phr, but the exact value might depend on the property under consideration.

'*Small amounts of factice are different*', Dr Flint said, 'and, in development work, to introduce factice into a compound, one should explore a range of properties, starting with small amounts. On the other hand, it is also true that *large amounts of factice are cheaper*, because the volume cost of factice is generally less than the volume cost of the compound to which it is added. Therefore, to seek to reduce a high factice content in an established compound which gives good results, might be very false economy'.

To illustrate the effect of factice in the curing system of SBR, Dr Flint cited cures in the presence of factice omitting elemental sulphur from the compound and data obtained by means of the Mooney viscometer, the FRADA cure-meter and the Sperberg Relaxed Compression Set test. In his experience, the latter was the most convenient and precise test he knew for determining the effect of factice on the rate and state of cure of a compound. Using this test, he showed that, in a tread type compound based on SBR, the effect of the factice appeared to depend qualitatively on the amount of accelerator present.

Factice in SBR

With reduced acceleration, compensated by the presence of 5phr of RO_3 type factice, the state of cure was improved over the entire cure range. This, Dr Flint explained, was the basis of 'factice compensated acceleration'.

Any attempt to explain the effect of factice on the curing system of SBR on the basis of free elemental sulphur present, would not be supported by the facts; while to define 'free sulphur' as 'sulphur available for vulcanization' was to argue in a circle.

The lecturer said that reticence about the activity of factice in the vulcanizing system could not be maintained after the publication, in 1959, of his paper on 'Factice Compensated Acceleration of SBR', which showed how the effect could be harnessed to do useful work. Former reticence seemed due to a needless fear of scorching effects. When such fears were based on laboratory scorch tests, it should be recalled that these laboratory tests had no absolute significance in factory practice, but only a derived significance — a significance derived from correlation established between the test and factory processing conditions, and based on the assumption that nothing had been added to the compound to alter that correlation.

If, for example, the laboratory reported that 5phr of a particular factice shortened the Mooney Scorch time of a compound by 15%, the compound should nevertheless be regarded as a safer compound if the factory found that the factice had reduced the processing temperature of the stock by 10°C. Factice had a powerful effect on processing properties.

In order to present an impartial picture of factice in an SBR compound, Dr Flint quoted data published by a laboratory on the Continent, for a range of factices submitted to them for test. The data showed the effect of 6.5phr of a range of four different factices on the processing and optimum vulcanizate properties of an SBR 1500 extrusion compound, and included examples of effects such as increased tensile strength and increased abrasion resistance. The general effect was to indicate that, at a given factice concentration, the way in which a given property was affected depended on the particular factice used.

Dr Flint then summarized his work on the factice compensated acceleration of SBR, showing that — in the case of an SBR 1502 tread type compound accelerated with cyclohexylbenzthiazyl-sulphenamide — a 40% reduction in accelerator content, compensated by an addition of 5phr of RO_3 factice, resulted in improvements, not due merely to accelerator reduction, in extrusion rate, extrudate section, hot tear resistance, cut growth resistance and resilience, without affecting heat build-up and laboratory abrasion loss.

Addition to Tread Compounds

Referring to the economics of factice compensated acceleration, Dr Flint said that the cost of the factice should not be set against the cost of the accelerator saved, because the volume cost of the factice was less than that of the compound to which it was being added. The factice, therefore, paid for itself, leaving a profit in the form of improved compound properties and a saving on acceleration cost.

The lecturer dealt next with the effect of a straight addition of 5phr of RO_3 factice to tread type compounds, based on SBR 1500, 1502 and oil extended polymer. The results of straight addition were attractive, in the case of the oil-extended polymer, including increased modulus, improvement in hot tear resistance, increased cut-growth resistance, reduced heat build up, and improved road wear resistance.

Dr Flint then dealt separately with

Continued on page 921

*'Factice in SBR — Particularly Tyres.' This lecture concluded a series of six on factice — previously reported in *RPW*, Nov. 4, 753 and Nov. 18, 842.

JMS

DESMODUR* R—for rubber to metal bonding and for self-curing cements.

DESMODUR* RF—similar to "Desmodur" R—but practically colourless.

VULKADUR* A—a synthetic resin with hardening and re-inforcing properties, primarily for copolymers of butadiene and acrylonitrile.

VULKADUR* T—auxiliary to improve rubber to fabric adhesion.

VULCANISING AGENT CDO 50—a curing agent for butyl rubber.

ANTIOXIDANT DDA—anti-flex cracking, low discolouration.

ANTIOXIDANT MB—non-discolouring—in compounds containing ultra-accelerators.

ANTIOXIDANT 4010 } Anti-flex cracking agent giving outstanding resistance to surface cracking caused by flexing, weathering and ozone.

ANTIOXIDANT 4010 NA } Similar to 4010 but increased protection can be achieved due to better solubility in rubber.

ANTIOXIDANT ZKF—for use in white or transparent vulcanisates—no discolouration.

ANTIOXIDANT PAN—phenyl alpha naphthylamine.

PERBUNAN* C—chloroprene rubber, available also as latex.

PERBUNAN* N—butadiene—acrylonitrile rubber, available also as latex.

SILCAFILL* C—a white, silica based reinforcing filler for natural and synthetic rubber.

Write Dept. N/5 for full details.

* *Registered Trade Mark*

JMS

J. M. STEEL & CO. LTD.

36-38 KINGSWAY, LONDON, W.C.2 Tel. HOLborn 2532/5

Branch Offices :

73/79 KING ST., MANCHESTER 2. Tel. Deansgate 6077/9
45 NEWHALL ST., BIRMINGHAM 3. Tel. Central 6342/3
144 ST. VINCENT ST., GLASGOW C.2. Tel. Central 3262

Plantation Newsletter

SMUGGLING RUBBER SEEDS

by our Malayan Correspondent

FROM KUALA LUMPUR

SMUGGLING rubber seeds out of Malaya has become big business, according to statistics issued by the Customs Dept. here. A total of 7,417lb. of rubber seeds worth $74,170 (nearly £7,000) in export duty, being smuggled out of the Federation on two occasions, have been seized off the west coast of Johore during the past three months.

The first smuggling attempt was made near Pontian. Customs officers discovered two men unloading 48 bags of rubber seeds weighing 5,628lb. from a lorry into a motor boat. The two men jumped into the boat and sped away. However, the lorry driver was arrested and the seeds confiscated.

The second attempt was made in the Straits of Johore when a Customs patrol boat intercepted a sampan carrying 14 bags of rubber seeds weighing 1,789lb. Three men in the sampan jumped into the sea and escaped into the nearby mangrove swamps.

It was learned here that rubber seeds are mainly smuggled from South Malaya because of its closeness to Singapore. In Singapore these seeds can find an easy market. Smuggling of rubber seeds in North Malaya, over the border into Thailand, is apparently negligible.

Meanwhile, according to rubber dealers, West Germany's purchases of Malayan rubber this year are expected to exceed 100,000 tons. Last year West Germany bought 95,808 tons, a record, from Malaya. In the first half of this year, West Germany was already Malaya's fourth best customer.

While some countries have been cutting down on their purchases of natural rubber from Malaya, West Germany has been buying more and more to meet her expanding industrial needs.

The rubber output for September at 64,636 tons was 3,046 tons more than the total for September last year. This was the fourth highest monthly output this year after July, January and August. July with 67,944 tons was the highest while April with 48,472 tons was the lowest productive month.

Production for September is considered high, taking into account that the month was a fairly wet one with intermittent rain in most parts of the country. However, the Ministry of Labour has reported 'no significant change' in employment conditions in the rubber industry.

For the first six months of this year, Britain topped the list of leading buyers of Malayan rubber, followed closely by America, Japan and West Germany. American purchases this year are likely to be slightly down due to her higher production of synthetic.

The annual report for 1960 of the Malayan Rubber Export Registration Board, just issued, shows that the Board dealt with 70 complaints from consumers during the year. These complaints were received from three sources: the Rubber Trade Association of London, 63; members of the Rubber Trade Association of New York, 6; and Wazirabad, West Pakistan, 1.

However, 30 of these complaints had been carried over from 1959. In addition, 13 complaints from the Rubber Trade Association of London, the relative samples of which had not been received by the end of the year, were carried over to this year.

Of the 70 complaints dealt with, fines were imposed on two offenders, warnings issued to nine, while no action was taken in the other cases for a number of reasons.

Best Dressed Wives

Wives of rubber tappers on a 65-acre estate near Kulim in North Malaya are among the best-dressed people in the State — thanks to the estate owner. Recently he told the tappers, 'Work at least 26 days a month and you will get two yards of cloth for your wives'.

The owner, too, made sure the wives heard of the offer. Now any tapper who feels like taking a day off is likely to be told by his wife to 'snap out of it' otherwise she is likely to lose her month's supply of free cloth.

Absenteeism on the estate is today almost unknown and in the labourers' quarters there is a steady whirring of sewing machines. On another estate in Kelantan, the owner presents each tapper who works for 28 days or more a month with a free sarong.

Rubber Exchange

Representatives of the Federation of Rubber Trade Associations and the Rubber Producers Council have been asked to submit names of experienced men connected with the industry to become directors of the new Rubber Exchange Corporation to be set up here early next year.

The secretary to the Ministry of Commerce and Industry, Raja Mohar bin Raja Badiozaman, has said that the names are urgently required because Parliament was expected to pass the Bill providing for the setting up of the Corporation in January. In the initial stage, the Ministry of Commerce and Industry will appoint the directors but later they will be elected by members of the exchange. Under its constitution, the exchange will have 12 directors, including one from the Government.

A special meeting has been held here to explain the purposes and aims of the exchange and its machinery to all members of the rubber industry. It was again stressed by the Government that while Malaya was going ahead as the biggest rubber producing country, it should take care to market rubber of international standards.

Rubber Statistics

UK — MALAYA

THE following UK import and export figures for October have been issued by the Board of Trade (in tons):

IMPORTS
(including synthetic and reclaimed)

	Oct. 1961	Oct. 1960
Nigeria	1,896	1,747
Singapore	4,418	4,832
Federation of Malaya	10,358	8,445
Ceylon	282	716
British North Borneo	459	198
Canada	1,224	1,780
Other Commonwealth	409	171
Vietnam	862	574
Indonesia	391	208
USA	1,454	3,185
Other	3,841	1,332
Total	25,594	23,188
Rubber latex	3,057	2,738
Other raw, including crepe	18,938	14,904
Balata	20	168
Synthetic rubber	3,123	3,938
Others	456	1,440
Total	25,594	23,188

EXPORTS
(including synthetic and reclaimed)

	Oct., 1961	Oct., 1960
Commonwealth countries	1,702	1,756
West Germany	275	483
Spain	320	1,100
Netherlands	435	499
France	479	335
Other	2,681	1,607
Total	5,892	5,780
Synthetic and reclaimed rubber	2,702	2,739
Waste or scrap	3,190	3,041
Total	5,892	5,780

Malaya

Shipments of sheet and crepe rubber from Malaya in October totalled 98,500 tons against 95,740 tons in September.

October shipments comprised: to the UK 9,949 tons, US 12,613, West Germany 5,378, Japan 7,563, the Soviet Union 29,080, other European countries 18,943, other Commonwealth countries 7,790, and other countries 7,184.

PLANTATION SHARE SURVEY

Prospects Difficult to Assess

UNITED SUA BETONG, the biggest of the rubber companies with a London Stock Market quote, had some disappointing news for shareholders in the half-time report which was issued just recently. The directors stated that judging by results to date the rubber crop is likely to exceed 24m. lb. The rubber crop for the ten months to the end of October last was 20,182,000lb., as against 19,409,000lb. for the same period a year ago. The average price of rubber for the first ten months of this year, however, was over 8d. per lb. lower than that for the corresponding period in 1960, and 7d. per lb. lower than the average for the whole of last year. The company's sales proceeds have fallen in the same proportion and costs of production are lower but as the chairman forecast earlier in the year the profit for 1961 is unlikely to reach the level of 1960. Meantime, shareholders are to receive a smaller interim dividend — 10% — as against 12½%. They received a total of 50% for the whole of last year.

Prospects for the rubber division of HARRISONS AND CROSFIELD are difficult to assess. This was the view of the chairman, Sir Leonard Paton, when he met shareholders at a meeting just recently. There are renewed fears of inflation: recovery in the USA is being induced by Government spending: the rate of growth in the Common Market countries shows signs of slackening under pressure from increasing costs and rubber shortages: expansion in the UK depends on the success of the recent measures undertaken to restore competitive strength. Britain's entry into the Common Market still under study is at present an unpredictable factor.

Sir Leonard said that it was a good thing that the rubber industry was meeting the future with great energy. Those present were told that basic research is being pressed as never before, led by the Malayan Rubber Fund Board and backed by a strong co-ordinating advisory committee in London. 'It is noteworthy that in the main synthetics as they emerge claim that they approach or match one or other of the properties of natural rubber. The effort to produce as nearly as possible natural rubber is surely acknowledgment that it remains supreme in its own field'.

Group profits for the year were returned at £1,618,400 from which taxation of nearly £1m. was deducted. Last year the final dividend paid on the deferred ordinary stock was 9½% with a bonus of 2½%. This year the board recommended a final of 12% repeating the year's total distribution of 15% but as a straight dividend without bonus. The directors have refrained from proposing an increase in the payment because of the Chancellor's request.

In a hard-hitting speech, P. B. L. Coghlan, chief of ANGLO-ASIAN RUBBER PLANTATIONS, tells shareholders 'with the advent of the new stereo types of synthetic rubber, natural rubber producers fully realize that in the not-too-distant future the natural rubber industry will have to be even more competitive in both price and quality'. Despite efforts already made along these lines, he points out that planters have no control over the selling price of their product which he considers is the real measure of how competitive natural rubber is with its synthetic substitute. Fluctuating prices have, the chairman stresses, been one of the main problems which have confronted producers and consumers of world commodities. But this drawback is particularly emphasized when there is a synthetic substitute selling at a stable price. Mr Coghlan puts forward a possible solution which is that the natural and synthetic industries should establish a closer liaison so as to become more complementary to each other than they are at present.

Meantime in the Stock Exchange the rubber plantation division has remained very quiet and there has not been sufficient business to produce what could be described as a serious test to prices. But there are those who think that quotations of many of the companies may have grounded — at least for the time being. So far as one can judge the fall in prices which has occurred so far this year is relatively heavier than the extent of likely dividend reductions. Yield returns from the better class stocks remain extremely generous.

BANDAR SUMATRA RUBBER has announced that in the light of uncertainties generated by the new Indonesian 'Basic Agrarian Law' — which will mean *inter alia* that the company's titles to the estates will not be renewed after expiry in June 1972 — the directors consider the figure of £85,104 at which the investment in Indonesia was shown in the last balance sheet is now totally unrealistic. It is proposed, therefore, that this be written down to £6,306 with the resulting loss of £78,798 written off capital to the extent of £74,885 by reducing the nominal capital of the shares from £1 to 5s. and the balance written off against the Indonesian revenue reserve. On the reduction of capital taking place it is proposed that the 99,847 shares of 5s. be subdivided into 1s. shares and the authorized capital restored by the creation of 1,500,765 shares of 1s. each — the directors have no plans at present for the issue of any of these new shares.

CHEMBONG MALAY RUBBER is one concern which seems to have hit something of a sticky patch. Earnings of the group have slipped from well over the £100,000 mark to £76,600. As a result the dividend has had to be slashed by 20% to 15%.

A large proportion of the company's crop is normally manufactured as sole crepe and concentrated latex, adding more than 2d. per lb. to local costs which, including export duty and cesses equal to 4½d. per lb., and shipping charges, amounted to 19.6d. per lb. on the 1960-61 output of 1,983,000lb. In the year previous to the one under review, outturn of 2,082,000lb. was produced at an Eastern cost of 19.0d. per lb. The profit includes £4,140 against £7,015 from the sale of planting material. This year a sum of £10,000 has been set aside to replacement reserve against nil last time as an offset to net expenditure of £7,200 on replanting.

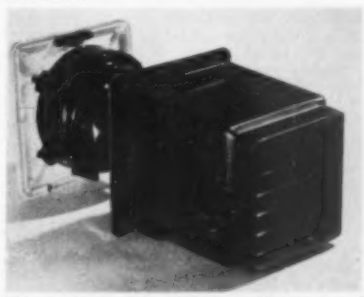
Until a little while ago the shares of LENGGENG RUBBER held firm apparently on the hopes of an offer for the estate from Eastern interests. But now the price has a deflated look about it and the return as a result has gone up sharply. This suggests that the bid element has been discarded. Last year's increase in output from 1,641,500lb. to 1,794,000lb. brings the company close to the currently exclusive 1,000lb. per acre category. One good reason why this appeals as a good speculative share which should have some following over the coming months.

FACTICE IN SBR

Continued from page 918

the effect of small additions of RO, factice on the extrusion characteristics of the tread compounds, based on SBR 1500 and on oil extended polymer. Favourable effects on extrusion rate and on extrudate appearance and section were noted. Die swell was reduced.

Concluding his lecture, Dr Flint thanked the College authorities on behalf of all the lecturers in the series of six lectures on Modern Factices and Present Uses in the Rubber Industry, for the invitation to lecture at the College on a very valuable and interesting material. He also thanked L. L. Roe, head of the applied science department, for taking the chair for all the lectures and discussions.



The outer casing of this wall-mounted Vent Axia unit is moulded by Ekco Plastics Ltd. from British Resin Product's Rockite DMC reinforced with sisal

Rubber Markets

LONDON

After dipping to lowest levels for several years, UK rubber prices finally improved slightly to finish the week ending November 29 ⅛d. to ¼d. per lb. easier on balance.

The market began on a comparitively steady note mainly due to a medium-sized Scandinavian order for various sheets and remills but, when this was satisfied, a softer undertone ensued which was seemingly aggravated by the United States Thanksgiving Day holiday.

The decline thereafter continued on a limited amount of selling pressure which met reluctance of buyers, while rumours that certain West German producers had reduced their prices for some synthetics also aided the downturn. (Confirmation that Bunawerke Hüls had cut the prices of its SBR later came to hand but failed to make any impact on the market, having already been discounted.)

Trading in landed was of moderate volume daily, a part of which must be attributed to switching. Interest in cif parcels was selective and mainly centred on No. 1 sheets, 2 X Browns and crepes.

Latest prices are as follows:
No. 1 RSS Spot: 22¼d.-22⅜d.
Settlement House:
January 22⅛d.-22⅜d.
February 22⅛d.-22⅜d.
March 23d.-23¼d.
January/March 23⅛d.-23⅜d.
April/June 23⅛d.-23⅜d.
July/September 23⅛d.-23⅜d.
October/December 23⅛d.-23¼d.
No. 1 RSS cif basis ports:
December 22d.-22¼d.
January 22⅛d.-22¼d.
Godown:
December 73¾ buyers (Straits cents).

LATEX

Centrifuged 60% latex per gallon in drums, seller, January, October, 13s. 3d., cif European ports. Spot, seller, 13s. 9d. Bulk, seller, d.w. 13s. 3d. Normal, seller, January, 10s. 4d.

AMSTERDAM

The Amsterdam rubber market ruled as under on November 27:

	Guilders per kilo	
No. 1 RMA	Nov. 27	Previous
November ..	2.15	2.16
December ..	2.15	2.16
January ..	2.15	2.16
February ..	2.15	2.16
March ..	2.15	2.16
January/March ..	2.15	2.16

Sales: Nil. Tendency: Quiet.

BANGKOK

The price of No. 1 RSS at Bangkok on November 27 was 24.87½ (25.00) US cents per lb.

CEYLON

The price of No. 1 RSS at Colombo on November 27 was 94 (88) Ceylon cents per lb.

NEW YORK

The New York rubber market ruled as under on November 27:

DEALERS' PRICES

	US cents per lb., ex-dock	
	Nov. 27	Previous
No. 1 RSS, Dec. ..	27⅛a	27⅛a
Jan. ..	27⅛a	27⅛a
No. 2 RSS, Dec. ..	27⅛a	27⅛a
Jan. ..	27a	27⅛a
No. 3 RSS, Dec. ..	26⅞a	26⅞a
Jan. ..	26⅞a	26⅞a
No. 1 RSS, Spot ..	27⅛n	27⅛n
No. 3 amber blanket crepe, Dec. ..	25⅛n	25⅛n
No. 1 latex, thin crepe, Dec. ..	—	—
No. 1 latex, thick crepe, Dec. ..	—	—

FUTURES — REX CONTRACT

	November 27	Previous Close
November ..	26.75n	27.00n
January ..	27.25b–27.50a	27.40t

Sales: One. Tendency: Quiet.

Futures were slightly lower on November 27 in very quiet dealings. Traders said physical rubber was quiet and little changed in price from Friday. In the closing stage, futures were very quiet. In physical rubber shipment rubber prices were slightly softer while ambers and browns were steady.

SINGAPORE

Conditions were very quiet on November 27. Minor price fluctuations were reported, traders being reluctant to enter the market. Only a small and selective interest was reported in lower sheet, while demand for remilled was mainly confined to near months. Very quiet conditions continued throughout the afternoon. Prices were virtually unchanged with little trading reported. Lowers were similarly neglected.

	Malayan cents per lb., fob, Malayan ports to open ports	
	Nov. 27	Prev. Close
No. 1 RSS, Dec. ..	74½–75	75⅛–75½
Jan. ..	75⅛–75½	76⅛–76½
No. 2 RSS, Dec. ..	73⅛–74⅛	74⅛–74½
No. 3 RSS, Dec. ..	72 –72½	72½–73½
No. 4 RSS, Dec. ..	71½–71⅞	71⅞–72½
No. 5 RSS, Dec. ..	70 –71	70½–71½
No. 1 RSS, prompt ..	74⅛–74½	74⅞–75⅛
No. 3 blanket thick remilled crepe, Dec.	71½–72½	71½–72½
No. 1 fine pale crepe, Dec.	85 –86	85 –86
2X thin brown crepe, Dec.	69½–70½	70 –70½

Tendency: Quiet.

DJAKARTA

	Rupiahs per kilo	
	Nov. 27	Previous
Spot No. 1 priok ..	41.50b	41.50b
Spot No. 2 priok ..	40.50b	40.50b
Spot No. 3 priok ..	39.50b	39.50b
Spot No. 1 fine pale crepe	37.50b	37.25b

Tendency: Steady, quiet.

Export Opportunities

Brazilian Consultants

Brazilian Trade Consultants, associated with Administradores Profissionais Associados of Sao Paulo, is offering services to UK companies interested in having their products manufactured in Brazil. The principal of the organization, Gordon B. Coleman, is now in the UK. His address is 17 Farm Avenue, North Harrow, Middx.

Calls for Tenders

Rubber Hose Pipes

2,000ft. ¾in. diam. rubber hose pipe with necessary connexion for every 100ft. length 4-ply, is required by the Director-General, Union of Burma Purchase Board, St. John's Road, Rangoon, to whom bids should be sent, quoting Quotation No. IIIB/785/60-61(H).

Closing date: December 9 1961. (Ref. ESB/35719/61.)

Rubber Hose, Belting

678 — Endless V-belts, various sizes, 40° angle, rubber and textile; 6,600ft. rubber hose, reinforced, various strengths and sizes, are required by the President, Department of Electricity, Water and Gas, Kuwait, to whom bids should be sent quoting Tender No. DE/22/2/96-61/62.

Closing date: December 6 1961. (Ref. ESB/35471/61.)

Plastics Roofing Sheets

Translucent plastics roofing sheets approx. ¼in. thick 43¾in. wide with 7½ nos. 5½in. corrugations. 240 sheets 7ft. long and 80 sheets 6ft. long, are required by the Director-General, Union of Burma Purchase Board, St. John's Road, Rangoon, to whom bids should be sent, quoting Quotation No. IIIB/769/60-61(H).

Closing date: December 12 1961. (Ref. ESB/36048/61.)

Polly Ester Says . . .

'A Centrifuge is a guardsman's lament'

Industry INTELLIGENCE

Technical Data

Nitrile Latex

Hycar 1700/E1 is a carboxylic modified butadiene acrylonitrile latex developed by British Geon Ltd., Devonshire House, Piccadilly, London, W.1, for the manufacture of rubber articles by coagulant dipping.

The latex is described in information sheet H110 which gives details of the use of Hycar 1700/E1 for the manufacture of gloves for which it is particularly recommended. Such gloves have exceptional resistance to hydrocarbon oils and solvents and are also resistant to detergents and oxidative degradation. Although the latex can be vulcanized by certain metal oxides or salts alone, for a tight cure with maximum oil resistance, the use of a combined zinc oxide/sulphur/accelerator system is recommended.

Polyolefine Antioxidant

Robinson Brothers Ltd., Ryders Green, West Bromwich, has recently announced that its plant for the manufacture of dilauryl 3,3′-dithiopropionate is now on stream.

This new product is described in a data sheet published by the company which is available from the address given above.

The major use for the material is expected to be as an antioxidant for polythene and polypropylene. One advantage over all other known classes of antioxidants is that it may be introduced during the polymerization process. Other antioxidants also act as polymerization inhibitors and must therefore be added to the polymerized material in a subsequent and additional manufacturing process.

Dilauryl 3,3′-dithiopropionate may also be used as an additive for extreme pressure and low temperature lubricating greases and is an effective antioxidant for foodstuffs, particularly milk and milk products, and for fats, oils and waxes. US federal regulations permit its use as an antioxidant in foodstuffs and has no toxic properties.

Tyglas for Industry

A booklet published recently by Fothergill and Harvey Ltd., Summit, Littleborough, Lancs., describes the company's Tyglas and allied glass fibre products, their uses and properties.

Tyglas covers a wide range of fabrics woven either from continuous filaments or staple glass fibre yarns. It is also available in the form of narrow width tapes, and woven roving or sliver fabrics.

The different weaves and constructions are described in the booklet which also gives the specification guides for broad cloth and tapes.

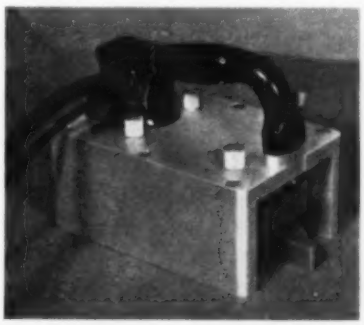
The major use of these glass cloths is for reinforced plastics and various fabric finishes are applied to improve the properties of laminates using different resins. The recommended finishes for various applications are listed and described.

Other applications of glass cloth described in the booklet include filtration, marine and thermal insulation, screencloths and coated with ptfe for non-stick high temperature conveyor belting for industries where sticky materials are handled.

Machines, Materials and Equipment

HF Welding Accessory

Shaped and styled not unlike a domestic flat iron, is the new Radyne pvc sheet welding hand applicator, manufactured by Radyne Ltd., Wokingham, Berks.



This device can be used for the rapid seam welding of sheeting for boat covers, lorry covers, agricultural and building sheeting, tents, awnings and banners.

A range of welding generators is available to provide the RF power, and these can either be carried to the operating site, or wheeled on the specially designed trolleys which are offered as standard accessories.

Vibrator Conveyor

Magco Ltd., Lake Works, Porchester, Hants., specialist in the vibratory movement of materials, has introduced a new conception in propulsion to the conveyor field.

The standard model MFU/B vibratory conveyor can be used for conveying most materials that a normal belt conveyor could be expected to handle as well as other difficult products.

It consists of a fabricated trough or tray mounted on a series of springs, set at an angle, and themselves mounted on a suitable base structure. Motive power is derived from synchronized unbalanced vibratory motor units which are flexibly connected to the tray.

Supplied as completely self-contained units in lengths of from 6ft. to 75ft., they may be coupled together until the required conveyor length is achieved. The individual drive motors are arranged for three-phase connexion and automatic control gear is provided so that each pair of motors will start together.

When using several units together a sequence interlocking device can, if necessary, be provided to insure that sections are started up in the required order, preventing build-up.

Publications

Laporte Products

A 56-page catalogue just published by Laporte Industries Ltd. lists nearly 300 chemicals manufactured by companies in the Laporte Group, from acetylsalicylic acid BP to zirconium organic compounds. Brief particulars of home and export packages are also given.

As well as products of the UK companies, the publication has sections devoted to the manufactures of subsidiaries in Australia and Canada and of the Elektrochemische Werke Munchen, AG, the German company which became part of the Laporte Group earlier this year.

The booklet has been published to meet the need for a concise summary of products following the rapid expansion of the Laporte Group at home and overseas.

Copies may be obtained from Laporte Industries Ltd., Group Publicity Department, New Bond Street House, 1-5 New Bond Street, London, W.1.

Extrudex PVC Tubes

Extrudex Ltd., Highams Park, London, E.4, has published a booklet detailing and illustrating tubes, fittings and valves made of pvc in Hi-K-80 and Hipact.

Hi-K-80 is a straight unplasticized compound of pvc. It is characterized by its resistance to chemical attack, combined with good impact strength. It is intended for use in the construction of chemical plant, particularly that dealing with the more corrosive acid and alkaline substances.

Hipact is a rigid compound of pvc incorporating a small percentage of synthetic rubber modifier. It is indicated in applications where high impact strength is necessary. It could be used in conveying corrosive waters in coalmines and naval vessels.

Synthetic Rubber Prices

Prices of synthetic rubbers appear regularly in RUBBER AND PLASTICS WEEKLY *in the first week of each month. It will be appreciated if suppliers will give notification of any price changes or additions to their range. Cif duty paid quotations are subject to slight variation due to exchange, ocean freight and insurance fluctuations. Prices are in pence per lb., except where otherwise stated. Grades are expressed as follows:* 1001/2/6 = *grades* 1001, 1002 *and* 1006.

(e-qdp)—Ex-quay duty paid (cifUKdp)—cif UK duty paid (e-i)—Ex-installation (ddp)—Delivered duty paid (e-sUK)—Ex-store UK (ex-wUK)—Ex-warehouse UK (d)—Delivered BM—black masterbatch CBM—cold, black masterbatch CNP—cold, non-pigmented CNS—cold, non-staining COE—cold, oil extended COBLC—cold, oil extended, light coloured CO/BM—cold, oil/black masterbatch CPOE—cold, pigmented, oil extended CRE—cold, rosin extended dw—Dry weight HN—high nitrile HNP—high nitrile, powder HP—hot, pigmented HS—high styrene HMW—high mol. wt. LMW—low mol. wt. MHN—medium high nitrile MLN—medium low nitrile MMW—medium molecular weight MN—medium nitrile NS—non-staining TS—total solids RTV—room temp. vulc.

SBR TYPES AND HIGH-STYRENE RUBBER

Ameripol (Goodrich Gulf) (e-qdp)

1000/1/6/7	Hot, non-oil	22.50
1002/12	,, ,,	22.75
1009	,, ,,	24.25
1011	,, ,,	23.25
1013	,, ,,	23.50
1019	,, ,,	24.75
1006/12	Hot, crumb	23.00
1009	,, ,,	25.00
1013	,, ,,	24.00
1500/1/2/9/11	Cold, non-oil	22.50
1605	BM, cold, non-oil	18.75
4658	,, ,, ,,	19.25
1606/8	,,	18.25
1609	,,	20.25
1610	,,	18.75
4651	,,	17.75
4600G2, 4604	Cold, non-oil	22.50
1703	COE, 25% oil	19.75
1705	,, ,, ,,	19.50
1707/8	,, 37.5% ,,	18.25
1710/12	,, ,,	18.00
4700	,, 50% ,,	16.75
4760	COBM, 17.5% oil	16.25
1805	,, 37.5% oil	16.00
1809	,, ,, ,,	15.75
4756	,, ,, ,,	15.75
4759	,, ,, ,,	16.25
1808	,, 50% ,,	15.25
4758	,, 62.5% ,,	15.00

ASRC (American Synthetic Rubber Corpn.) (e-sUK)

1004/6	Hot, non-oil	22.25
1009	,, ,,	24.0
1018	,, ,,	24.75
1019	,, ,,	24.5
1500/2/7	Cold, non-oil	22.25
1503	,, ,,	24.25
1703	COE	20.5
1708	,,	18.0
1712	,,	17.75
1713	,,	16.75
3014	Hot, non-oil	25.75
3105/6	Cold, non-Oil	22.25
3110	,, ,,	24.0

Cariflex (Shell Chemical) (e-sUK)

S-1000	Hot	22.25
S-1002	,,	23.375
S-1006	,,	22.25
S-1009/11/13	,,	24.0
S-1500/2/9	Cold	22.25
S-1600/2	CBM	19.625
S-1605	,,	19.375
S-1606	,,	18.75
S-7652	,,	20.0
S-1703	COE	19.25
S-1707	,,	18.0
S-1709/12	,,	17.75
S-1803	COBM	17.875
S-1806	,,	16.625
S-1807	,,	17.375
S-1808	,,	15.25

Contract terms available.

FR-S (Firestone) (delUK*)

1000/1/4/6/7 and 195	Hot	22.50
1500/2 and 146	Cold	22.50
1703 and 173	OE	19.11
1710/12 and 184	,,	18.00
178	,,	18.25
201	,,	16.71
1009 UK Specialty		23.06
1012 ,, ,,		22.59
1013 ,, ,,		23.59
1014 ,, ,,		26.18
181 ,, ,,		22.50
182 ,, ,,		23.29
147 ,, ,,		20.94
158 ,, ,,		28.00
158-S		27.50

*Import Duty not included

Int. Synthetic Rubber (d)

Intol 1500/2	22.5
Intol 1509	22.5
Intol 1570	23.5
Intol 1006	22.5
Intol 1710	18.0
Intol 1712	18.0
Intol 1778	18.25

Naugapol (Naugatuck Chemical International) (ex-WUK)

1016	28.5
1018	27.5
1019/6003/4	26.25
1022	32.25
1023	34.5
1503	26.25
1504	36.5
6101	24.5
6100	33.5
K45	28.0
K50	28.5
1015	36.5
K65	29.75
Kralac A.EP	31.5

ANIC (e-qdp)

1500	22.25
1502	22.25
1708	18.00
1712	17.75
6630	23.25
6632	22.25
6700	16.375

Philprene (Phillips) (d)

1000/6	Hot, non-pig.	22.50
1009	,, ,,	23.06
1018	,, ,,	24.99
1019	,, ,,	22.5
6701	,, ,,	22.50
1500/2/3	CNP	22.50
6630	,,	23.75
6632	,,	22.50
1601	CP	19.70
1603	,,	19.25
1605	,,	18.75
1606	,,	18.25
1608	,,	18.75
1609	,,	21.27
6655	,,	19.25
1703	COE	19.50
1708	,,	18.25
1712	,,	18.00
6700	,,	16.85
1803	CPOE	18.13
1805	,,	16.00
1808	,,	15.50
6608	,,	15.33
6753	,,	15.50
6754	,,	15.25
6755	,,	17.50

Plioflex (Goodyear) (ex-wUK)

1006	Hot, non-oil	22.25
1019/1503	CNP, electrical	22.25
1500/2/7/10	CNP	22.25
1006S		22.75
1712C	COE	17.75
1708/78	,,	18.00
1713/15	,,	16.25
1714C	,,	16.00
1773	,,	19.25
224	HS(d)	27.00

Polysar (Polymer UK) (e-sUK)

S/S-630 Hot	22.50
Krylene	22.50
Krylene NS	22.50
Krylene 602 Cold	22.50
Krynol 651 COE	18.00
Krynol 652/4 ,,	18.25
Krynol 653 ,,	18.00
S-X 371 Process Aid	24.08

Synpol (Texas-USChemical) (e-qdp)

1000/1/6/7/61/61C	Hot	22.25
1009	,,	22.81
8000	,,	22.25
1500/2/51	Cold	22.25
8104	,,	22.25
1703	COE	19.25
1707/8/8200	,,	18.00
1712	,,	17.75
8201/8	,,	16.59
8202	,,	16.38
8209	,,	19.16
1606	CBM	18.20
1608	,,	18.45
1806	COBM	15.84
1808/8255	,,	14.80
8257	,,	14.96
1814	,,	15.45

(Masterbatch prices US cents per lb. fas Gulf ports)

SBR LATICES

Copo (Copolymer) (cifUKdp)
(10-ton lots)

2101	(dw)	46.3
X-765	,,	40.8
X-800	,,	37.2
2102/5	,,	38.0

Ciago

SB75	38.00
SB69	36.00
SB57P BM	27.50
SB58P	29.75

Pliolite Rubber (Goodyear) (d)

2000	40

Latex (dw)

2001/4/5/8	40
5350	40

Pliolite Resin (Goodyear) (d)

101A (dw)	44
150 ,,	50
151 ,,	35
160 ,,	50
170 ,,	50

Hycar (B. F. Goodrich) (ddp)

2507 (HS) dw	48

Polysar (Polymer UK) (e-sUK)

Latex, type IV	32.50 TS
Latex, type 722	31.75 TS
Latex, type 741	36.00
Latex, type 781	68.00
(Non-returnable 45-gallon drums)	
Latex, type IV	29.00
	(e-i)
Latex, type 722	27.00 TS
Latex, type 723 (bulk quantities)	27.00

Int. Synthetic Rubber (ex-wks)

Intol Latex M23B/R23/F28	22.25
Intol Latex 62A	27.0

Dylex (Koppers Int. CA) (fas)

K-42A/52/31/900	31.6

ACRYLONITRILE TYPES

Butaprene N (Firestone) (cifUKdp)

NL	52.5
NAA	56.25
NF	51.5
NXM	60.18

Chemigum (e-s)

N—1	75
N—3A	52
N—5	52
N—6G/7/8/600X	45

Hycar (British Geon) (UKd)
(500-lb. lots and over)

1001 High Nitrile Hot	52
1041 ,, ,, Cold	52
1002 MHN Hot	45
1042 ,, Cold	45

Hycar (B. F. Goodrich) (ddp)
(500-lb. lots and over)

1411 HNP	66
1432 MHN (crumb)	64
1072 ,, (carboxyl)	66
1312 ,, (liquid)	55
1043 MLN	51
1014 Low Nitrile	61

I.C.I. (min., 5-cwt. lots) (UKd)

Butakon A-4051 HN Cold	52
Butakon A-3051 MN Cold	45
Butakon A-3002 ,, ,,	45

Paracril (US Rubber) (dwe-sUK)

18-80 Low Nitrile	61
AJ ,, ,,	50
B MLN	51
BJ ,,	51
BLT ,, Cold	51
BJLT ,, ,,	51
C MHN	59
CLT ,, Cold	59
CV ,, (crumb)	63
D High Nitrile	67
ALT	51
OZO	47

Polysar (Polymer UK) (d)

Krynac 800 MN	45
Krynac 802 LN	45
Krynac 803 MN (low Mooney)	45
Krynac 801/5 HN	52
Krynac 804 (MN-cross linked)	45

ACRYLONITRILE LATICES

Butaprene N (Firestone) (cifUKdp)

N-300 (dw)	53
N-400 ,,	60.5

Chemigum Latex (Goodyear) (d)

200 (dw)	65
235/6 CHS ,,	60
245 B ,,	52
245/6/7/8 CHS ,,	52

Ciago

AB61/71	60
AB62/77	52
217OH	60

Hycar (B.F. Goodrich) (ddp)
(dry weight, drum lots)

1551 High Nitrile	66
1552 MHN	57

Hycar (British Geon) (UKd)
(dry weight, 3 drums and over)

1561 High Nitrile	60
1571 ,, ,, (carboxyl)	60
1562 MHN	52
1577 (modified)	52

ACRYLIC TYPES

Hycar (B. F. Goodrich) (ddp)

4021 Slab, 500 lb. and over	144
4501 Latex, dry weight	96

BUTYL TYPES

Esso (e-sUK)

Regular 035/150/215	21.75
Regular 217/8	21.75
Regular 325	21.75
Non-staining 165	22.75
Non-staining 268	22.75
Non-staining 365	22.75

Polysar (Polymer UK) (e-sUK)

Butyl 100/200/300		21.75
Butyl 301/400	NS	21.75
Butyl 101	NS	26.25
Butyl 402	NS	22.5
Butyl 600	NS	25.75

Hycar (B. F. Goodrich) (ddp)
(500 lb. and over)

2202 Brominated	68

ISOPRENE RUBBER

Shell Chemical Co. (e-sUK)

Cariflex I-300	24.5
Cariflex I-305	24.5
Cariflex I-500 OE	21.5

POLYBUTADIENE

Int. Synthetic Rubber (UKd)

Diene 35	27.0
Diene 50	27.0

Phillips (UKd)

Cis-4 Polybutadiene (Min. 10-ton lots. Smaller quantities 27.51)	27.0

NEOPRENES

Du Pont (UK production)

W	(del)	38.5
WHV	,,	37.0
WX	,,	40.5
WRT	,,	44.0
GS	,,	41.0
GRT	,,	42.0

(USA production)

AC/AD	(del)	57.125
S	,,	45.625
KNR	,,	75.625
CG	,,	57.125

Latices (UK)

842A	(dwdel) 45-gal. drums	41.0
842A	,, 2,000-gal. tanker	36.0
601A	,, 45-gal. drums	45.0
601A	,, 2,000-gal. tanker	40.0

Latices (USA)

60	(dwdel) 45-gal. drums	51.875
400	,, ,, ,,	54.125
571	,, ,, ,,	49.75
572	,, ,, ,,	51.25
635	,, ,, ,,	53.625
650	,, ,, ,,	54.125
673	,, ,, ,,	62.0
735.6/50	,, ,, ,,	51.25
950	,, ,, ,,	58.25

HYPALON (ddp)

20	48
30	60.25
40	50.75

SILICONE RUBBERS

Midland Silicones
(500-lb. lots del)

Stocks	16s. 6d. to 35s.
Pastes	26s. to 35s.
Gums and base stock	36s. to 42s.
Cold-curing silicone rubber	20s. and 23d. 6d.

I.C.I. Silicones

Gums (40-lb. lots del)	39s. 6d.-47s.
Stocks (250-lb. lots del)	22s.-35s.
Pastes (1000-lb. lots del)	27s.6d.-35s.9d.
Silcoset (RTV) (250-lb. lots del)	21s. to 24s.

REINFORCING RESINS AND RUBBERS

I.C.I. (min., 2-ton lots) (UKd)

Butakon S-8551	36.5
Butakon S-7001	33.5

Hycar (B.F. Goodrich) (ddp)

2007 (powder)	42.5

Pliolite (Goodyear) (d)

S—6B	36.5

Polysar (Polymer UK) (e-sUK)

SS-250 HS (bale)	27.00
SS-250 ,, (flake)	27.25
S-X370	23.75
S-X371	24.25
SS-260 (flake)	29.25
Kryflex 200	23.75
Kryflex 252 HS	25.25
Kryflex 202 (HMW Cold polymerized)	23.50

Cariflex (Shell Chemical) (e-sUK)

SP-103	27.25

Cyclite (Durham Raw Materials) 42

Future Events

Institution of the Rubber Industry

Burton-on-Trent Section. — December 4 at the Midland Hotel, Station Street, Burton-on-Trent, at 7.30 p.m. 'The Rubber Processor and the Compounding of Silicone Rubbers', by Dr I. H. Riley (Midland Silicones Ltd.).

Merseyside Section. — December 4 at the Exchange Hotel, Liverpool, at 7.30 p.m. 'Rubber Mixing and its Problems', by F. Keane (Dunlop Rubber Co. Ltd.).

North-Eastern Section. — December 4 at the Eldon Grill, Newcastle, at 7 p.m. 'Cis 1-4 Polybutadiene, its Properties, and Applications', by F. Nield.

South Wales and Monmouthshire Section. — December 4 at the Welsh College of Advanced Technology, Cathays Park, Cardiff, at 7.30 p.m. 'Accelerators and Antioxidants for Rubbers', by L. M. Dadson (I.C.I. Ltd.).

Plastics Institute

London and District Section. — December 5 at the Wellcome Building, Euston Road, London, N.W.1, at 6.30 p.m. 'Toxicity', by P. P. Hopf (A. Boake, Roberts and Co. Ltd.).

North-Eastern Section. — December 6 at the Eldon Grill, Eldon Buildings, Grey Street, Newcastle-on-Tyne, at 7 p.m. 'Tool Design', by a member of the staff of the BIP Tools Ltd.

North-Western Section. — December 8 at the Textile Institute, 10 Blackfriars Street, Manchester 3, at 6.45 p.m. Joint Symposium with IRI, Manchester Section.

South Wales and Monmouthshire Section. — December 6 at the Park Hotel, Cardiff, at 7 p.m. Supper meeting. Address by the chairman of Council, L. M. Read.

Southern Section. — December 7 at the Chemistry Department of the University of Southampton, at 7.30 p.m. 'Molecular Architecture', by M. Gordon (Imperial College of Science and Technology).

Diploma in Technology

RECENT AWARDS

DETAILS of recent Diploma of Technology awards were released this week.

Successful students include: A. K. M. Walczak (Shell Research Ltd.); P. A. Steven, D. Davies and E. Bedwell (all of British Insulated Callender's Cables Ltd.); C. Cheesebrough (I.C.I. Dyestuffs Ltd.); K. E. Walker, R. Ellison, J. B. Taylor, K. G. Townley, and T. T. Wood (all of I.C.I. Dyestuffs Ltd.); G. Pye, W. K. Chapman, K. Piper, D. G. Wells, D. A. Partridge (all of Standard Telephones and Cables Ltd.); F. Baines (Imperial Chemical Industries Ltd.); R. D. Turney (Courtaulds Ltd.); D. G. S. Hirst (Ciba Laboratories Ltd.); M. J. Berry (British Celanese Ltd.); A. J. Buxton (Albright and Wilson Ltd.).

TRADE MARKS

Objections to the registration of any of the undermentioned applications may be lodged with the Comptroller-General of Patents, Designs and Trade Marks at the Patent Office, 25 Southampton Buildings, Chancery Lane, London, W.C.2, within one month of the date mentioned. The objections must be stated on Trade Marks Form No. 7, cost £2, obtainable through any money order office. The extracts—from 'The Trade Marks Journal'—given below are reproduced by permission of the Controller of H.M. Stationary Office.

Lumirror (815,194). Films and sheets of synthetic resin plastics, all included in Class 17. Toyo Rayon Kabushi-Ki Kaisha, 1 of No. 1, 2-Chome, Nihonbashi-Muro-Machi, Chuo-Ku, Tokyo-To, Japan. Address for service is c/o A. A. Thornton and Co., Northumberland House, 303-306 High Holborn, London, W.C.1. (Class 17; November 1 1961.)

DEM DEMFOAM OAM

(817,355). Foamed materials and articles made therefrom, all included in Class 17. D. M. Industrial Plastics Ltd., Kingsbridge Road, Cottimore Lane, Walton-on-Thames, Surrey. (Class 17; November 1 1961.)

Flexvin (821,707). Hose pipes, vacuum cleaner hose and wire-reinforced tubes; all made principally of plastics. Recon (Pipelines) Ltd., Plansel Works, Albert Drive, Sheerwater, Woking, Surrey. (Class 17; November 1 1961.)

Polyzote (823,842). All goods included in Class 17 made from rubber, artificial rubber, balata, artificial balata or plastics. Expanded Rubber Co. Ltd., 675 Mitcham Road, Croydon, Surrey. (Class 17; November 1 1961.)

Gauntlet (821,711). Packing materials, shaped sections and articles included in Class 17, all made of plastics. Insola Ltd., 20 Grosvenor Place, London, S.W.1. (Class 17; November 1 1961.)

Aspect (821,030). Building materials of plastics. Allied Structural Plastics Ltd., Tolpits, Watford, Hertfordshire. (Class 19; November 8 1961.)

Evotape (818,919). Insulating tape. Evode Ltd., Common Road, Stafford. (Class 17; November 8 1961.)

NEW COMPANIES

Eurocon (Plastics) Ltd. (705,947). October 18. Capital: £1,000 in 10s. shares. To carry on the business of flooring contractors, manufacturers of, and dealers in, plastics, etc. The directors are: William Lyon-Shaw, Fairlawn, Wylam, Northumberland (director of W. Lyon-Shaw Ltd.); Charles A. Elliott, 351 Cowpen Road, Blyth, Northumberland. Regd. office: Witton Works, Pipewellgate, Gateshead, Co. Durham.

K. W. Siddall Plastics Ltd. (706,050). October 19. Capital: £1,000 in £1 shares. To carry on the business of manufacturers of, and dealers in, plastics and plastics products, etc. The directors are: Kenneth W. Siddall and Mrs Ina Siddall, both of 138 High Storrs Road, Sheffield, 11. Regd. office: 138 High Storrs Road, Sheffield, 11.

Allen Bros. (Southsea) Ltd. (706,030). October 19. Capital: £14,000 in £1 shares. To carry on the business of manufacturers of, and dealers in, tyres, etc. The directors are: William H. H. Allen and Richard S. Allen, both of Albert Road Junction, Southsea; Elvina D. Allen, Helen Thompson and Walter H. Garland.

Stockport Tyre Service Ltd. (706,045). October 19. Capital: £100 in £1 shares. The directors are to be appointed by the subscribers.

Philip Pegg Ltd. (706,177). October 20. Capital: £15,000 in £1 shares. To acquire the business of tyre distributors belonging to Philip Pegg and carried on at 55 London Road, King's Lynn, Norfolk, etc. The directors are to be appointed by the subscribers.

Changes of Name

L.W.G. (Plastics) Ltd. (386,204), 46 Market Place, Reading. Name changed to Airflx Plastics Ltd. on July 28 1961.

Kusto (England) Ltd. (561,255), plastic manufacturers, etc., Chancery House (South Wing), Chancery Lane, W.C.2. Name changed to Plastikant Ltd. on July 27 1961.

Beetle Bond Ltd. (228,399), plastics, etc., 28 Haymarket, S.W.1. Name changed to B.I.P. Gaydon Ltd. on June 15 1961.

Bruxbat Plastics Ltd. (681,106), 130 Cape Hill, Smethwick. Name changed to Masefield Plastimetals Ltd. on June 29 1961.

Stockwell Engineering Co. Ltd. (499,980), 24 Stockwell Square, W.1. Name changed to Westware Household Plastics Ltd. on June 20 1961.

Brighton Laminations (1957) Ltd. (593,908), Ayling House, King's Road, Horsham, Sussex. Name changed to Bribond Printed Circuits Ltd. on May 10 1961.

This 4-ply Terylene/cotton fabric conveyor belt made by Barrow Hepburn and Gale Ltd. runs between 2,500ft. centres. One of the longest field conveyors in the country, it replaces three cotton belts, saves two transfer points and the wages of two men and can carry 200 tons of sand and gravel per hour

CLASSIFIED ADVERTISEMENTS

RUBBER AND PLASTICS WEEKLY

APPOINTMENTS VACANT

8d. a word, Minimum 12/- Box 2/-

DUE to considerable expansion of sponge department an experienced chemist and a technician are required to assist in development and control. Good welfare schemes and conditions.—Apply stating experience and salary required to Box 171. (171)

EXTRUSION expert capable of managing extrusion plant including die design, research and development. Exceptional opportunity in small but expanding company in Birmingham area. Applicants must provide full details of age and past experience. All applications will be treated in strict confidence.—Box 203. (203)

BTR

at

BURTON-ON-TRENT

require a

SECTION LEADER

(for DEVELOPMENT and MATERIAL EVALUATION)

Candidates should be aged 23-30 years—possess AIRI —have experience in MECHANICAL MOULDINGS and in particular rubber to metal bonding.

The successful candidate will direct the activities of a section developing new products and evaluating a variety of raw materials.

The Company offers:—
HIGH SALARIES—commensurate with qualifications and experience. Good conditions and prospects.

Send full career details to:—
Mr. M. S. Allen
(Ref. S/L—G.M.F.),
Central Personnel Department,
BTR INDUSTRIES LTD
Herga House,
Vincent Square,
LONDON, S.W.1. (210)

GENERAL works manager required with wide experience of all aspects of the rubber industry, excluding tyres, latex and proofing. Preferably with university degree, but certainly able to produce proof of successful record in similar posts.—Reply in confidence to Box 200. (200)

R. W. GREEFF & CO., LTD., require a chief chemist for their technical service and research laboratory at Newbury, Berkshire. Applications from holders of the AIRI, or a good university degree are invited.—Brief facts of career to date and salary required must be included in application, which should be addressed to The Technical Development Manager, Rubber & Allied Chemicals, R. W. Greeff & Co., Ltd., The Laboratory, Hambridge Lane, Newbury, Berks. (202)

RUBBER IMPROVEMENT LIMITED

require an experienced

SALES MANAGER

to assume control of their

Conveyor Belting Division

Applicants must have a proven sales record and have experience in negotiating at a very high level. The Company operates a progressive policy and a considerable programme of advertising and promotion. This is a senior executive position and applicants with suitable qualifications will enjoy a generous salary, non-contributory pension scheme, life insurance, profit-sharing, car, etc.—Write in complete confidence to The Chairman, Rilex House, 2 Chandos Street, London, W.1. (205)

APPOINTMENTS VACANT

RUBBER IMPROVEMENT LIMITED

require an experienced

SALES MANAGER

to assume control of their

Building and Industrial Division

Applicants must have a proven sales record and have experience in negotiating at a very high level. The Company operates a progressive policy and a considerable programme of advertising and promotion. This is a senior executive position and applicants with suitable qualifications will enjoy a generous salary, non-contributory pension scheme, life insurance, profit-sharing, car, etc.—Write in complete confidence to The Chairman, Rilex House, 2 Chandos Street, London, W.1. (206)

RUBBER IMPROVEMENT LIMITED

require an experienced

SALES MANAGER

to assume control of their

P.V.C. Sales Division

Applicants must have a proven sales record and have experience in negotiating at a very high level. The Company operates a progressive policy and a considerable programme of advertising and promotion. This is a senior executive position and applicants with suitable qualifications will enjoy a generous salary, non-contributory pension scheme, life insurance, profit-sharing, car, etc.—Write in complete confidence to The Chairman, Rilex House, 2 Chandos Street, London, W.1. (207)

RUBBER IMPROVEMENT LIMITED

require an experienced

SALES MANAGER

to assume control of their

Fibreglass Division

Applicants must have a proven sales record and have experience in negotiating at a very high level. The Company operates a progressive policy and a considerable programme of advertising and promotion. This is a senior executive position and applicants with suitable qualifications will enjoy a generous salary, non-contributory pension scheme, life insurance, profit-sharing, car, etc.—Write in complete confidence to The Chairman, Rilex House, 2 Chandos Street, London, W.1. (204)

SUPERINTENDENT required by expanding organisation in Midlands to control section of factory engaged upon calendering and moulding. Permanent night work.—Write full details, Box 181. (181)

BTR

requires an

Assistant Project Engineer

at

BURTON-ON-TRENT

Candidates should
* be age group 25-35;
* have had a minimum of 3 years' experience in industry;
* have had experience of handling:—
  (a) major engineering projects;
  (b) machine design;
  (c) factory layout and services;
* hold BSc BEng or AMIMechE.

The Company offers:—
HIGH SALARIES—commensurate with qualifications and experience.
Good conditions and prospects.
Send tabulated career details to:—
Mr. M. S. Allen (Ref. APE),
Central Personnel Department,
B.T.R. INDUSTRIES LIMITED
Herga House, Vincent Square, London, S.W.1. (197)

APPOINTMENTS VACANT

RUBBER — ESTABLISHED 1912 — PLASTICS

LINDSAY AND WILLIAMS LIMITED

MANCHESTER 11

REQUIRE A QUALIFIED

CHIEF CHEMIST

AGED 27-35 YEARS: EXPERIENCE IN COATING OF TEXTILES ESSENTIAL

GOOD SALARY AND PENSION SCHEME

(195)

QUALIFIED chemist required for senior laboratory appointment. Applications are invited from chemists with technical experience in the compounding of rubber, plastics, etc., process and quality control. Accommodation arranged, if necessary.—Write stating age, salary and full details to Kagan Textiles Ltd., Gannex Mills, Elland, Yorkshire. (208)

VACANCY in expanding rubber factory situated South London for experienced foreman in calender and mixing shop. Experience in press shop an advantage. Excellent opportunity for right applicant. Salary according to experience. Bonus and pension scheme in operation.—Apply in confidence to Box 214. (214)

MSL *have been retained to advise on this appointment.*

PROJECT DEVELOPMENT MANAGER

for a North Country company designing, developing and manufacturing rubber and plastic hose and belting, and employing 500 out of the 3,000 in the group to which it belongs. He will be responsible for implementing the long term programme of fundamental product and process research. This currently includes projects for the development of high pressure hose design, textile and wire lapping processes, and P.V.C. flame-proof mine conveyor belting. He will take charge of the project development laboratory and will direct the work of three sections headed by experienced technologists.

Candidates must be graduate chemists or technologists who through experience have gained a thorough practical knowledge of the manufacture, structure and qualities of rubber and plastic hose and belting. Initial salary £2,000 to £2,500 p.a. with assistance in removal expenses and house purchase offered. Please send brief details in confidence quoting reference LU.3036 to G. V. Barker-Benfield.

In no circumstances will a candidate's identity be disclosed to our client unless he gives permission after a confidential interview at which he will be given full details of the appointment.

MANAGEMENT SELECTION LIMITED

17 Stratton Street, London, W.1

(196)

Better try 600 first!

WP.62716—600-ton Upstroke Hydraulic Press by **John Shaw.** Glanded ram 18" dia. x 4' 0" stroke. Working pressure 5,500 p.s.i. Four steel columns 7½" dia. having a distance between of 80½" x 19½". Fully guided moving table and head have a working area of 80½" x 54". Daylight 6' 6".

WP.62746—200-ton Upstroke Multi-Daylight Hydraulic Press. Glanded ram 16" dia., 18" stroke. Working pressure 2,240 p.s.i. Fabricated rolled steel frame fitted with seven steel steam heated platens 50" x 26" arranged with ladder supports to give six daylights of 3½" each. Two available.

WP.62778—160-ton two-daylight Upstroke Hydraulic Press by **Francis Shaw.** Glanded ram 15" dia., 12" stroke. Working pressure 1 ton p.s.i. Four steel columns 4" dia. having a distance between of 21½" x 7½". Fitted with three steel steam-heated platens 18" x 18". Ladder supports fitted to give two daylights of 6" each. Four available.

WP.62078—NEW 100-ton Downstroke Hydraulic Press by **T. H. Dixon Ltd.,** Model No. 822/100. Glanded ram 12" dia., 20" stroke. Working pressure 2,000 p.s.i. Four steel columns 3½" dia. having a distance between of 21½" x 12½". Fully guided moving table and base have a working area of 21½" x 22½". Fitted with one pair electrically heated platens 20" x 20" complete with thermostatic control valve between platens 20". Moving table returned by two 3" dia. pushback rams. Press fitted with double-acting hydraulic ejector ram and cylinder. Direct driven by self-contained Pumps by **Vickers** driven by a 4 h.p. motor and starter complete with piping and control gear. Two available.

WP.62666—Horizontal Unjacketed Vulcanizing Pan by **Leeds & Bradford Boiler Co.** 5' dia. x 20' 6" long. Arranged with quick locking door fitted internally with steam and spray pipes along with 24" gauge track. Complete with bogies and external portable track. Included is fittings and temperature recorder. Working pressure 60 p.s.i.

WP.62610—Double Geared Rubber Mixing Mill by **Francis Shaw.** Rolls 60" x 18" and 27½" dia. arranged for steam heating and water cooling. Friction ratio 1.178 : 1. Front roll speed 89' 0" per minute. Hand screw adjustment to rolls driven through spur gearing and sturdigear reduction gearbox. A 100 h.p. slipring motor by B.T.H. complete with starter suitable 380/420/3/50 cycle supply. Mill mounted on rolled steel baseplate arranged for vibro mounting complete with chest bars, electro magnetic brake, etc.

WP.62773—6" dia. x 8' stroke Hydraulic casing type Accumulator by **Bradley & Turton.** Capacity 10 gallons. Working pressure 1 ton p.s.i. Complete with ballast casing 7' 6" square x 8' deep. External guide structure along with deflecting valve.

WP.62774—Vertical four-throw Hydraulic Pump by **Bradley & Turton.** Capacity 15 g.p.m. up to a pressure of 2,240 p.s.i. Rams 2", dia. 5" stroke. Direct driven through gearing and vee belts by 30 h.p. slipring motor by **Brooks.** Pump and motor mounted on cast iron bedplate. Motor complete with contactor type starter suitable 400/440/3/50 cycle supply. Two available.

GEORGE COHEN

THE 600 GROUP OF COMPANIES

SONS AND COMPANY LIMITED

SUNBEAM ROAD, LONDON, N.W.10

Telephone: Elgar 7222 Telegrams: Omnitools, Harles, London

STANNINGLEY, NR. LEEDS

Telephone: Pudsey 2241 Telegrams: Coborn, Leeds

194

APPOINTMENTS VACANT

PLUS PRODUCTS LTD

This progressive manufacturing company, already well established as a major contributor to industry seeks a

CHIEF DEVELOPMENT CHEMIST

who must be experienced in the manufacture and development of

RUBBER ADHESIVES AND ALLIED PRODUCTS

The post is one of responsibility in an expanding organisation and provides excellent opportunities for advancement to the successful applicant who will be expected to supervise and carry out various development programmes within the company's modern laboratories.

Salary £1,000 to £1,500 p.a. Further information available to suitable applicants who should apply with a summary of their careers to

The Technical Director,
Plus Products Limited,
Queensway,
Team Valley,
Gateshead, 11. (192)

This column can be YOUR best BUYER or SELLER

RUBBER & PLASTICS

MACHINERY

Why not see for YOURSELF

MACHINERY FOR SALE

8d. a word, Minimum 12/- Box 2/-

'COTSWOLD' equipment for the production of latex dipped goods, PVC dip mouldings and PVC dip coating.—Lionel Hook & Sons, Ebley, Stroud, Glos. Telephone Stonehouse 614/5. (216)

FOR sale. 5 Edgwick semi-automatic 1½oz. injection moulding machines. Machines in good working order, little used. Cost approx. £2,000 each—willing to offer for quick sale at £600 each.—Inspection at Davidsons Engineers (M/C) Ltd., Irkdale Street, Smedley Road, Cheetham Hill, Manchester, 8. Telephone Collyhurst 1610. (209)

Donald Leaver Limited

1 LONDON ROAD, STAINES, MIDDX. Phone STAINES 55271-2

FOR **SECONDHAND PLANT AND MACHINERY** (1057)

MACHINERY FOR SALE

For RE-BUILT
RUBBER AND PLASTIC
HYDRAULIC MACHINERY
CONTACT
HODSON & Co. (MACHINERY) LTD
Spring Mills, Tottington
Nr. BURY, LANCS.
Phone: TOTtington 123 (099)

HYDRAULIC presses, pumps, valves, new, also large secondhand stock.—Thompson and Son (Millwall) Ltd., Cuba Street, London, E.14. East 1844. (427)

MANUFACTURERS of roughing machines for rubber sheeting, sponge rubber, splitting machines, leather cloth plant, embossing plates and rollers, spreading machines and presses.—G. L. Murphy Ltd., Imperial Works, Menston, Nr. Leeds. (238R)

NEW, 'Battleship strong' constructed, steel mangles, weight 104lbs., 4½in. dia. x 12in. machined steel rollers with ¾in. dia. x 3in. extended drive shaft on one, bronze bearings, suitable for a variety of small rolling uses, sketch available. £6 10s. each.—Woodfield and Turner Ltd., Burnley. Tel. 78134. (178)

— PHONE RAINHAM 5655 —

PRESSES - MILLS - PLATENS - ETC.

Guaranteed Secondhand Plant

E. & V. GIBBONS LTD. LAMBS LANE, RAINHAM, ESSEX (430)

MACHINERY WANTED

8d. a word, Minimum 12/- Box 2/-

MELLOR Equipment Ltd., Springfield Lane, Salford, 3, buy used machinery of Francis Shaw and Joseph Robinson manufacture.—Telephone Manchester, Blackfriars 1866. (428)

ONE Mooney Plastometer in good condition.—Offers to S.A. Industrial Suppliers Ltd., Portland House, 4 Great Portland Street, London, W.1. (212)

WANTED. 8oz. plastics injection moulding machine. Horizontal type.—Please send full details and price asked to Box 211. (211)

WANTED. Laboratory rubber mixing mill, even speed 12in.-18in. rolls.—Box 199. (199)

2-ROLL laboratory mixing mill. 12in. wide by 6in. dia. rolls. Steam heated to a minimum temperature of 175°C and electrically driven together with motor and starter mechanism.—Box 198. (198)

20IN. x 20in. (or near) cracker complete with reduction gear and motor.—Box 166. (166)

Butyl

SEALANTS LTD

3 CLOAK LANE LONDON E.C.4

for

LAMINATES · SHEET · SPONGE · STRIP

(929)

AGENCIES and REPRESENTATIVES

8d. a word, Minimum 12/- Box 2/-

SALES representative required for the South Midlands and South of England. Applicants should preferably have technical experience in the fields of synthetic rubbers, resins and/or plastics.—Please apply to Box 213. (213)

SELLING agents required by manufacturers specialising in small foam rubber mouldings for the surgical, corsetry, footwear, engineering, electrical, motor and furnishing trades.—Box 215. (215)

TRADE SERVICES

8d. a word, Minimum 12/- Box 2/-

SCISSORS, up to 7in. ground and set by London cutlers established over 100 years; 48 hours postal service, 1/6 per pair.—J. A. Fowler, 18/22 Bell Street, Edgware Road, London, N.W.1. PAD 1491. (74R)

TRADE SERVICES

COLLINSON'S
Engineers and Mould Makers
MOULDS
MADE TO THE FINEST LIMITS OF ACCURACY
17 BATH STREET, SYSTON, LEICESTERSHIRE
TEL. SYSTON 3472 (882)

ARTICLES WANTED

REGULAR BUYERS **P.V.C.** SHEET SCRAP
MICHAEL S. STEVENS LTD
STATION WORKS, 75c UPPER RICHMOND RD., S.W.15
VANDYKE 6925 (739)

L. STECHLER & CO LTD

175 MALVERN ROAD, KILBURN,

LONDON, N.W.6

Phone MAIDA VALE 0012/3.4

TELEX No. 21229

We specialise in . . .

MANUFACTURERS' SOLE CREPE CUTTINGS
Pale, Brown, Coloured, Buffings, etc.

DAMAGED CRUDE RUBBER

CRUDE RUBBER OFF-GRADES

SALVAGE CRUDE RUBBER

SYNTHETIC RUBBER OFF-GRADES
All grades of Crude Rubber can be supplied cut into thin slices or slabs

BALE CUTTING FOR THE TRADE
We are able to undertake the bale cutting of your own rubber, either natural or synthetic

PROMPT DELIVERIES — *Your enquiries are welcomed. May we quote and send you samples?*

For

A.I.D. APPROVED

MIXING
MOULDING
DICING

Rubber or Plastics

Enquire:

HATCHAM RUBBER CO. LTD.

PRINCES WAY, WADDON, CROYDON, SURREY

PROMPT SERVICE • *Telephone: CROydon 6054/6*

INDEX to ADVERTISERS

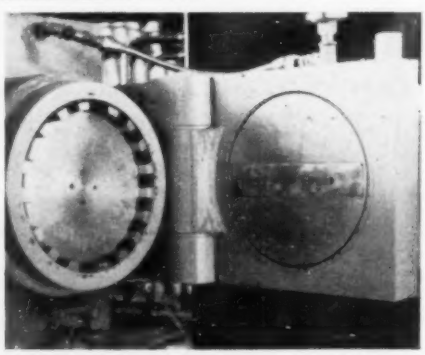
	Page
Abrasive Developments Ltd.	—
A.E.W. Ltd.	—
Allcock, J., & Sons Ltd.	—
Amalgamated Oxides (1939) Ltd.	—
Anchor Chemical Co. Ltd.	xiv
Anderson, Joseph, & Sons Ltd.	—
Armour Hess Chemicals Ltd.	—
Associated-Rediffusion Ltd.	—
Astor Boisselier & Lawrence Ltd.	—
Baker Perkins Ltd.	xiii
Barwell Engineering Ltd.	930
Belgrave Industries (Exports) Ltd.	—
Berk, F. W., & Co. Ltd.	—
Berstorff, Hermann	—
B.I.P. Chemicals Ltd.	—
Birch, Singleton, W., & Sons Ltd.	—
Bone Bros.	—
Boston Marine & General Eng. Co. Ltd.	—
Bridge, David, & Co. Ltd.	Cover ii
Bright, John, & Bros. Ltd.	Cover iii
British Electrical Development Association	—
British Geon Ltd.	—
British Nylon Spinners Ltd.	—
British Recovered Rubber Co. Ltd.	iii
British Resin Products Ltd.	—
British Titan Products Co. Ltd.	—
British Transport Commission	—
Bush Beach & Segner Bayley Ltd.	—
Cabot Carbon Ltd.	—
Carter Bros. (Rochdale) Ltd.	—
Catomance, Ltd.	901
Carlton Press Knives Ltd.	—
Chance & Hunt	—
Chemical & Insulation, Ltd.	v
C.I.C. Engineering Ltd.	—
Cleggswood Oil Distillery Ltd.	—
Cohen, George, Sons & Co. Ltd.	—
Columbian International (Gt. Britain) Ltd.	i
Consolidated Zinc Corporation (Sales) Ltd.	xi
Courtaulds Ltd.	—
Crosfield, Joseph, & Sons Ltd.	—
Croxton & Garry Ltd.	—
Derrick Davis Plastics Ltd.	—
Dietzel, Hugo	—
Distillers Co. Ltd., The	—
Dixon, T. H., & Co. Ltd.	—
Docker, John, & Co. (Engs.) Ltd.	893
Dunlop Rubber Co. Ltd.	—
Du Pont Co. (United Kingdom) Ltd.	894
Durham Raw Materials Ltd.	—
Economist Intelligence Unit Ltd., The	
Ellison, George, Ltd.	—
English Clays Lovering Pochin & Co. Ltd.	—
English Electric Co. Ltd., The	—
Esso	—
eur-O-matic	—
Fawcett Preston & Co. Ltd.	—
Felber Juker & Co. Ltd.	ix
Ferguson, A. O., & Co. Ltd.	xii
Ferguson, James, & Sons Ltd.	—
Ferguson Shiers Ltd.	—
Firestone Tyre & Rubber Co. Ltd.	—
Foamair Ltd.	—
Geigy Co. Ltd., The	—
Goodyear Tyre & Rubber Co. Ltd.	913
Greeff, R. W., & Co. Ltd.	—
Gresham & Craven Ltd.	—
Gummi und Asbest	—
H.F. Industrial Services Ltd.	—
H.K. Import & Export Ltd.	—
Halsteads Engineers (Leyland) Ltd.	902
Hankin, Geo., & Co. Ltd.	929
Hardman & Holden Ltd.	vii
Harrison Jones	—
Hatcham Rubber Co. Ltd.	928
Hay & Robertson Ltd.	—
Hilton, Wallace, & Co. Ltd.	—
Hubron Rubber Chemicals Ltd.	—
Hughes & Hughes Ltd.	—
Hunt Heat Exchangers Ltd.	—
Iddon Bros. Ltd.	ii
Iliffe Industrial Publications Ltd.	—
Imperial Chemical Industries Ltd. (Billingham)	—
Imperial Chemical Industries Ltd. (Dyestuffs)	Cover i
Imperial Chemical Industries Ltd. (Plastics)	—
Imperial Chemical Industries Ltd. (Terylene)	—
Institution of the Rubber Industry	—
International Corporation Ltd.	—
International Synthetic Rubber Co. Ltd.	897
Ioco Ltd.	—
K.W. Chemicals	—
Kautschuk und Gummi	—
Kendell, T., & Sons Ltd.	viii
Ketjen Carbon	—
Kuala Lumpur-Kepong Amalgamated Ltd.	—
Lankro Chemicals Ltd.	—
Laporte Titanium Ltd.	—
Latex Engineering Co.	—
Lavino (London) Ltd.	—
Leader, Denis, Ltd.	—
Leaver, Donald, Ltd.	—
Leeds & Bradford Boiler Co. Ltd., The	
Lindsay & Williams Ltd.	—
Lonabarc Ltd.	x
Londex Ltd.	—
London & Scandinavian	—
Lord, R., & Sons Ltd.	—
McKechnie Bros. Ltd.	902
Maclaine, Watson & Co. Ltd.	—
Merkle, P. W., Ltd.	—
Mersey White Lead Co. Ltd., The	—
Metal Box Co.	—
Micafine Ltd.	viii
Monsanto Chemicals Ltd.	—
Morton Machine Co. Ltd.	—
Muehlstein, H., & Co. (London) Ltd.	
Muller, Max	—
Natural Rubber Bureau	—
New Conveyor Co. Ltd.	—
Nederlandsch Verkoopkantoor Voor Chemische Producten N.V.	—
Noble Lowndes Pension Service, The	—
Northwestern Rubber Co. Ltd.	vi
Novadel Ltd.	—
Oswald & Duncan Ltd.	x
Philblack Ltd.	—
Phoenix Rubber Co. Ltd.	iv
Planters Engineering Co. Ltd.	—
Polymer (United Kingdom) Ltd.	—
Preston Tyre Fabric Manufacturing Co. Ltd.	vi
Price's (Bromborough) Ltd.	—
Pullen, James H., (1942) Ltd.	—
Quick-Wrap Tubing Co. Ltd.	907
Reed Bros. (Eng.) Ltd.	—
Revue Generale du Caoutchouc	—
Rhein-Chemie GmbH.	—
Robinson Bros. Ltd.	—
Ro-Search Inc.	—
Robinson, Joseph, & Co. Ltd.	—
Rotunda Ltd.	—
Rubber Age (New York) Ltd.	—
Rubber Estate Agency Ltd.	—
Rubber Latex Ltd.	—
Rubber Regenerating Co. Ltd.	—
Scott Bader & Co. Ltd.	—
Sealants Ltd.	—
Shaw, Francis, & Co. Ltd.	Cover iv
Shell Mex & B.P. Ltd.	905
Shell Chemical Co. Ltd.	—
Shell International Chemical Co. Ltd.	—
Smith, Alfred, Ltd.	—
Smith, Wilfred, Ltd.	xii
Squire, Frederick, Ltd.	—
Stechler, L., & Co. Ltd.	929
Steel, J. M., & Co. Ltd.	919
Steele & Cowlishaw Ltd.	—
Stocker, W. B., & Co. Ltd.	—
Storeys of Lancaster	909
Stott, James, Ltd.	—
Sturge, John & E., Ltd.	—
Sussex Rubber Co. Ltd.	—
Sutcliffe Engineering Components Ltd.	—
Sutcliffe Speakman & Co. Ltd.	917
Tanner Bros. (Greenfield) Ltd.	—
Tilghman's Ltd.	—
Union Carbide Ltd.	—
United Norit Sales Corporation Ltd.	—
United Wire Works Ltd., The	—
Universal Oil Co. Ltd.	—
Universal Oil Products Co.	—
Vacu-Blast Ltd.	—
Verson Engineering Co. Ltd.	—
Wallace, H. W., & Co. Ltd.	—
Wallis Engineering Co.	—
Washington Chemicals	—
Webb, W. F. (Engineers) Ltd.	—
Welwyn Tool Co. Ltd.	—
Whiffen & Sons Ltd.	—
Witco Chemical Co. Ltd.	—
Zama Ltd.	—

BARWELL BATCH EXTRUDER FOR RUBBER

- ★ Very rapid die changing
- ★ Lower and controlled temperatures
- ★ No wastage of compound
- ★ Less labour required
- ★ Colour compounds can be used in quick succession
- ★ Extrusions with consistent dimensions through multi-aperture dies

BARWELL ENGINEERING LTD

Swavesey, Cambridge. Tel. Swavesey 383 (3 lines)



Printed in Great Britain by F. J. PARSONS, Ltd., London and Hastings, and published by the Proprietors, MACLAREN & SONS, LTD., Maclaren House, 131 Great Suffolk Street, London, S.E.1

TUFTED CARPET YARNS AND COTTON AND SYNTHETIC FABRICS FOR THE RUBBER ELECTRICAL AND CHEMICAL TRADES

JOHN BRIGHT & BROTHERS LTD.

SPINNERS DOUBLERS AND MANUFACTURERS

ROCHDALE

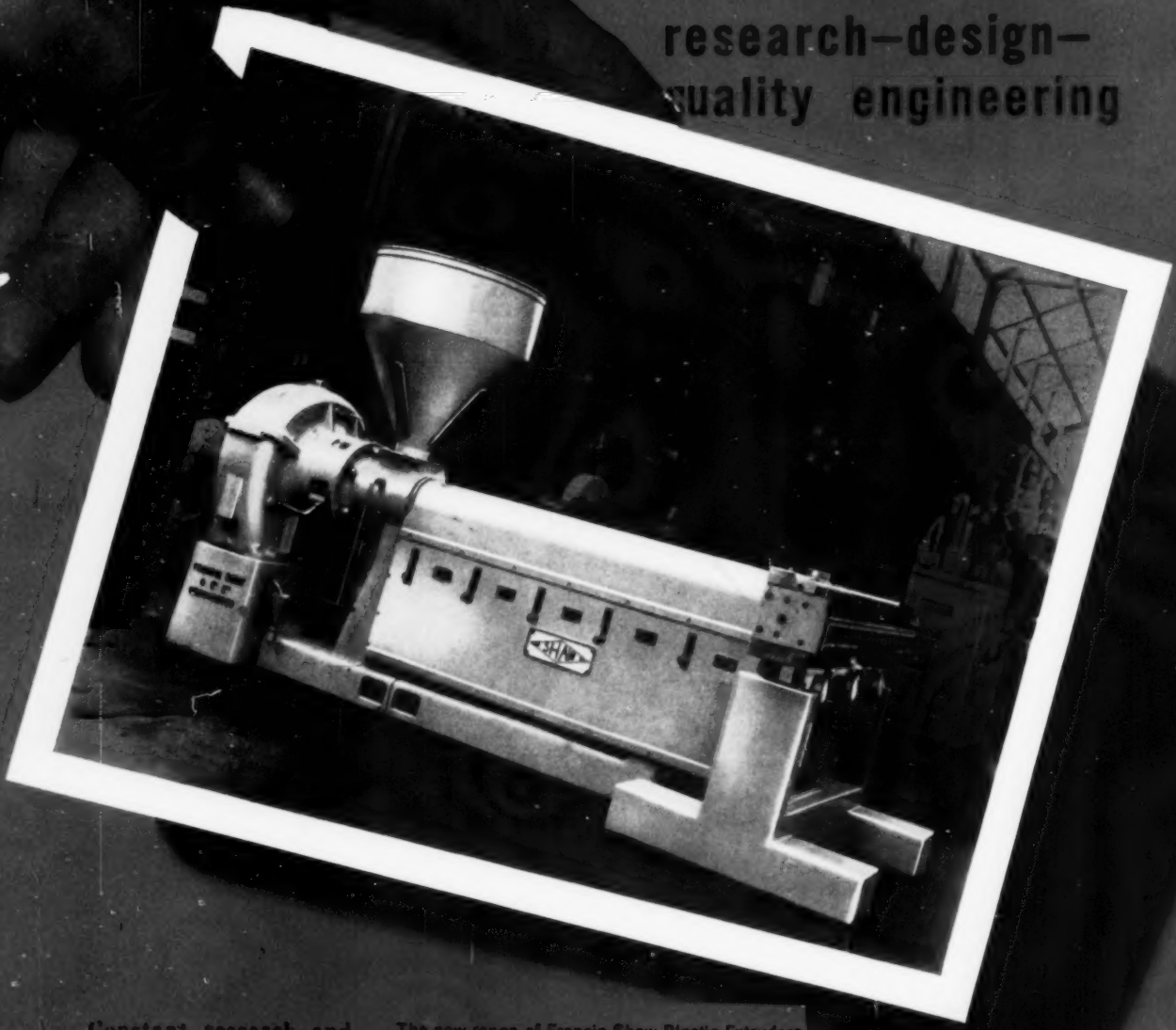
TELEPHONE: ROCHDALE 4141 (5 LINES)

TELEGRAMS: 'BRIGHTS' ROCHDALE

ESTD. 1809

behind every
Francis Shaw
machine

research–design–
quality engineering



Constant research and development, close co-operation with users, advanced design, selected high quality materials . . .
These, coupled with long experience, help to create processing machinery of unrivalled performance.

The new range of Francis Shaw Plastic Extruders are designed for end products in all thermoplastic materials including Polystyrene, Polyethylene and P.V.C. in plasticised or rigid form.

- Extrusion in sheet, tube, film or solid sections
- Engineered for consistent performance
- Modern heating and cooling control
- Special design of dies and complete auxiliary equipment

Francis Shaw

FRANCIS SHAW & COMPANY LIMITED · MANCHESTER 11 · ENGLAND
TELEGRAMS: "CALENDER" MANCHESTER · TELEPHONE: EAST 1313-8 · TELEX: 66-357
London Office: 22 Great Smith Street London SW1 · Telephone: Abbey 2245 · Telegrams: Vibrate London · Telex: 22260
Canada: Francis Shaw (Canada) Ltd Grahams Lane Burlington Ontario · Telephone: Nelson 4-2350 · Telegrams: Calender Burlington Ontario
Telex: Canada Calender Hamilton 921/962

OVERSEAS AGENTS THROUGHOUT THE WORLD P4398